DOCUMENT RESUME

ED 273 290 IR 051 614

AUTHOR	Griffiths, Jose-Marie; And Others
TITLE	Study To Develop a Long-Range Library Automation and Network Development Plan for the Commonwealth of Virginia. Final Report. Phase I Report. Phase II Report.
INSTITUTION	King Research, Inc., Rockville, Md.
SPONS AGENCY	Virginia State Library, Richmond.
PUB DATE	85
NOTE	685p.
PUB TYPE	Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)
EDRS PRICE	MF04/PC28 Plus Postage.
DESCRIPTORS	Computer Networks; Cost Effectiveness; Legal Problems; *Library Automation; Library Cooperation; *Library Networks; *Library Planning; Library Statistics; Library Surveys; *Needs Assessment; Online Systems; Questionnaires; *Shared Library Resources; *Statewide Planning
IDENTIFIERS	Multitype Library Networks; *Virginia

ABSTRACT

The first of two phases of this study consisted of assessing the need for a more formal library network in Virginia by surveying libraries, conducting site visits, interviews, and regional hearings, and reviewing documentation on existing levels of automation and networking in the commonwealth. Information gathered during this phase supported both the need and the desire for a more formal library networking configuration. Phase 2 focused on the development of alternative strategies for the evaluation of the more formal configuration, and the development of specific recommendations for a phased implementation plan for library networking in Virginia. The final report provides an executive summary, background information on the project, an overview of the needs of Virginia libraries, a list of the 15 recommendations that resulted from Phase 2, and the formal plan produced by the project. This plan covers the purpose of the network; its legal structure and governance; membership criteria and levels of participation; network services; implementation activities at various levels, including a schedule for implementation; and a summary of projected costs. The complete report for Phase 1 includes a description of study methods and a detailed report on the findings of the needs assessment. Data tables and survey forms are among the extensive appendices for this phase. The report for Phase 2 describes in detail various networking alternatives and spells out the proposed plan. Five references, a 31-item bibliography, a detailed cost analysis, and a discussion of options for networking components are appended to this interim report. (KM)

****
*   Reproductions supplied by EDRS are the best that can be made   *
*   from the original document.   *
****

ED273290

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

STUDY TO DEVELOP A LONG-RANGE LIBRARY AUTOMATION AND NETWORK DEVELOPMENT PLAN FOR THE COMMONWEALTH OF VIRGINIA

FINAL REPORT

IR051614

King Research, Inc.
6000 Executive Boulevard, Rockville, Maryland 20852 (301) 881-6766

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Amy S. Pesak

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

STUDY TO DEVELOP A LONG-RANGE LIBRARY AUTOMATION AND NETWORK DEVELOPMENT PLAN FOR THE COMMONWEALTH OF VIRGINIA

FINAL REPORT

December 31, 1985

Prepared By:

Jose-Marie Griffiths, Ph.D.
Paula Meise Strain

King Research, Inc.
6000 Executive Boulevard
Suite 200
Rockville, Maryland 20852

(301) 881-6766

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY 1

SECTION 1 INTRODUCTION 1

SECTION 2 NEEDS OF LIBRARIES IN VIRGINIA 6

SECTION 3 RECOMMENDATIONS 8

SECTION 4 LIBRARY AUTOMATION AND NETWORK DEVELOPMENT PLAN FOR THE COMMONWEALTH OF VIRGINIA 15

4.1 Statement of Purpose 15

4.2 Legal Structure and Governance of the Network 15

4.3 Membership and Levels of Participation 16

4.4 Network Services 16

4.5 Implementation Activities 17

4.5.1 Activities to be Conducted at the State or Network Level 17
4.5.2 Activities to be Conducted at the Regional level 19
4.5.3 Activities to be Conducted at the Local Level 20
4.5.4 Schedule for Implementation 21

4.6 Projected Costs 21

LIST OF FIGURES AND TABLES

Page

Figure 1 Number of Libraries in Each Region that Belong to Library Cooperatives or Networks in Virginia, 1985 2

Figure 2 Number of Libraries in Each Region that Currently Utilize Automation in Virginia, 1985 3

TABLE 1 NETWORK COSTS 30

EXECUTIVE SUMMARY

This report describes a study to Develop a Long-Range Library Automation and Network Development Plan for the Commonwealth of Virginia. The outcome of the first phase of this two-phase study was the determination that a more formal library networking configuration is both desired and needed in Virginia. The outcome of the second phase is a long-range (15-year) plan for the development of such a configuration.

Key issues leading to our conclusions were:

- Over the last decade many libraries in Virginia initiated automation and retrospective conversion projects in response to their own needs and their vision of the future of libraries. To date, a significant investment (of well over $4 million) has been made in library automation and networking in Virginia. The Virginia database of library holdings contains over 2 million unique titles held by 95 libraries throughout the Commonwealth. A microfiche catalog (CAVALIR) containing these data is distributed to 271 Virginia libraries. However, although this activity represents the most advanced use of a statewide database, only 12 percent of the holdings of Virginia libraries are included; only 5 percent of Virginia libraries have their data included; and only 13 percent of Virginia libraries receive CAVALIR. The return on the investment of over $4 million will not be optimized until the automated libraries make full use of their machine-readable records and all libraries share the machine-readable database to share library resources and/or to support their own automation efforts.

- Library networking offers a number of distinct benefits to participating libraries.

    - Libraries (and therefore citizens and residents of Virginia) gain access to a significantly greater range of library materials and facilities, and expertise of library personnel, than they could individually.

    - Economies of scale can be achieved through shared costs and volume discount arrangements.

    - Automation opportunities become feasible for libraries that could otherwise not take advantage of them, for reasons of cost, of lack of expertise, etc.

    - Cost savings and/or improved performance must be the main criteria in determining whether or not to offer or participate in various service offerings. Library networking has enabled libraries to keep pace with accumulating volumes of information, multiple formats and media, and increasing demands of users.

- Automation and network development needs to be well coordinated so that libraries can derive the four major benefits mentioned above.

- The establishment of a Virginia library network as a new division of the State Library is recommended, to take advantage of existing legislation and networking expertise.

- Success of the networking activities planned over the next 15 years is dependent upon participation in network services by a critical mass of libraries.

- All libraries in Virginia are eligible for membership in the network, regardless of type, size, geographic location or state of automation. Furthermore, participation in the Virginia network does not preclude membership in other networks.

SECTION 1
INTRODUCTION

This study of library automation and networking in Virginia has been conducted in two phases. The outcome of Phase I of a Study to Develop a Long-Range Library Automation and Network Development Plan for the Commonwealth of Virginia was the determination that a more formal library networking configuration is required in the state. Phase II of the project focused on the development of alternative strategies for the evaluation of the more formal configuration, and development of specific recommendations for a phased implementation plan for library networking in Virginia.

Since the late 1960's libraries have recognized the benefits of library cooperation or networking. Various consortia representing single and multiple types of libraries have been established in the state to facilitate discussion, planning and implementation of cooperative activities. Other librarians have worked together on an informal basis to develop mutually beneficial programs. A number of these consortia and informal groups have explored the possibilities for use of common systems to support their needs for library automation and cooperation, and several shared systems are operational or in process of development. Overall, an estimated 60 percent of the libraries in Virginia currently participate in some form of library networking. Figure 1 presents the distribution and proportion of libraries that participate in library networking by region within the state. The numbers of libraries in each region that participated in libary networking were determined from the Survey of Virginia Libraries conducted during Phase I of this study. The proportions are of all libaries in each region that responded to the survey. Note that the survey did not include each library but each library administrative unit. This means that school libraries did not respond individually, but collectively through the school divisions. Similarly, public library systems provided collective responses, as did most academic institutions.

However, various networking activities developed in the early days of cooperative ventures are no longer appropriate in terms of structure, service offerings, technology utilization, etc. The Commonwealth of Virginia has decided that the time has come to review and analyze the existing resource sharing environment and structure within which the Commonwealth's libraries operate.

It appears that one of the forces behind this review is the technology that has evolved to support library operations and interlibrary communication. An estimated 49 percent of libraries in Virginia use automation to support various library operations. Figure 2 presents the distribution and proportion of library automation by region within the state. However, if individual libraries are left to make individual decisions about acquiring equipment, systems and services, the end result could be a series of isolated, incompatible automated library systems which can only be used locally. Automated library networks can only develop successfully through careful planning and coordination by all participating libraries.

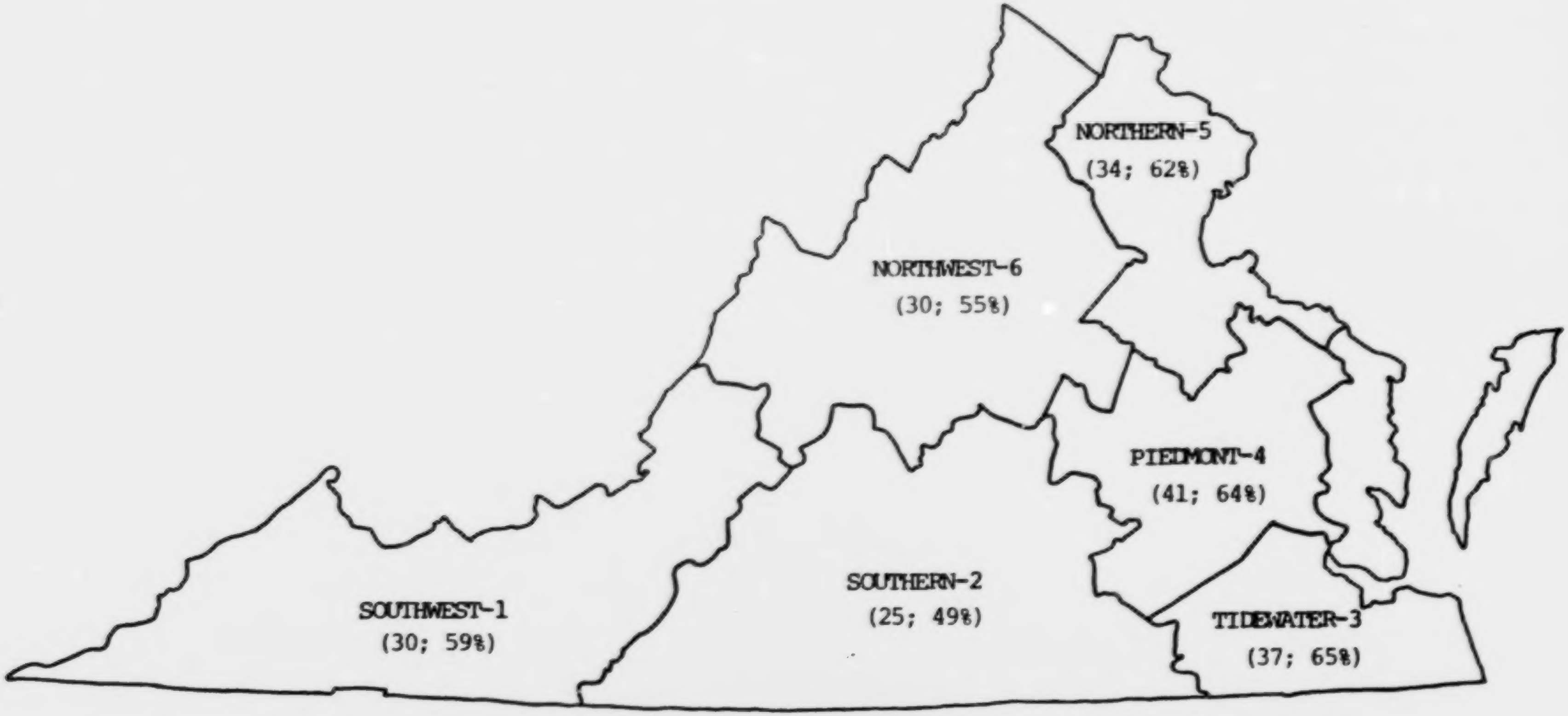

NORTHERN-5
(34; 62%)
NORTHWEST-6
(30; 55%)
PIEDMONT-4
(41; 64%)
SOUTHERN-2
(25; 49%)
SOUTHWEST-1
(30; 59%)
TIDEWATER-3
(37; 65%)

Figure 1. Number of Libraries in Each Region that Belong to Library Cooperatives or Networks in Virginia (proportion is of all libraries in each region responding to the survey), 1985

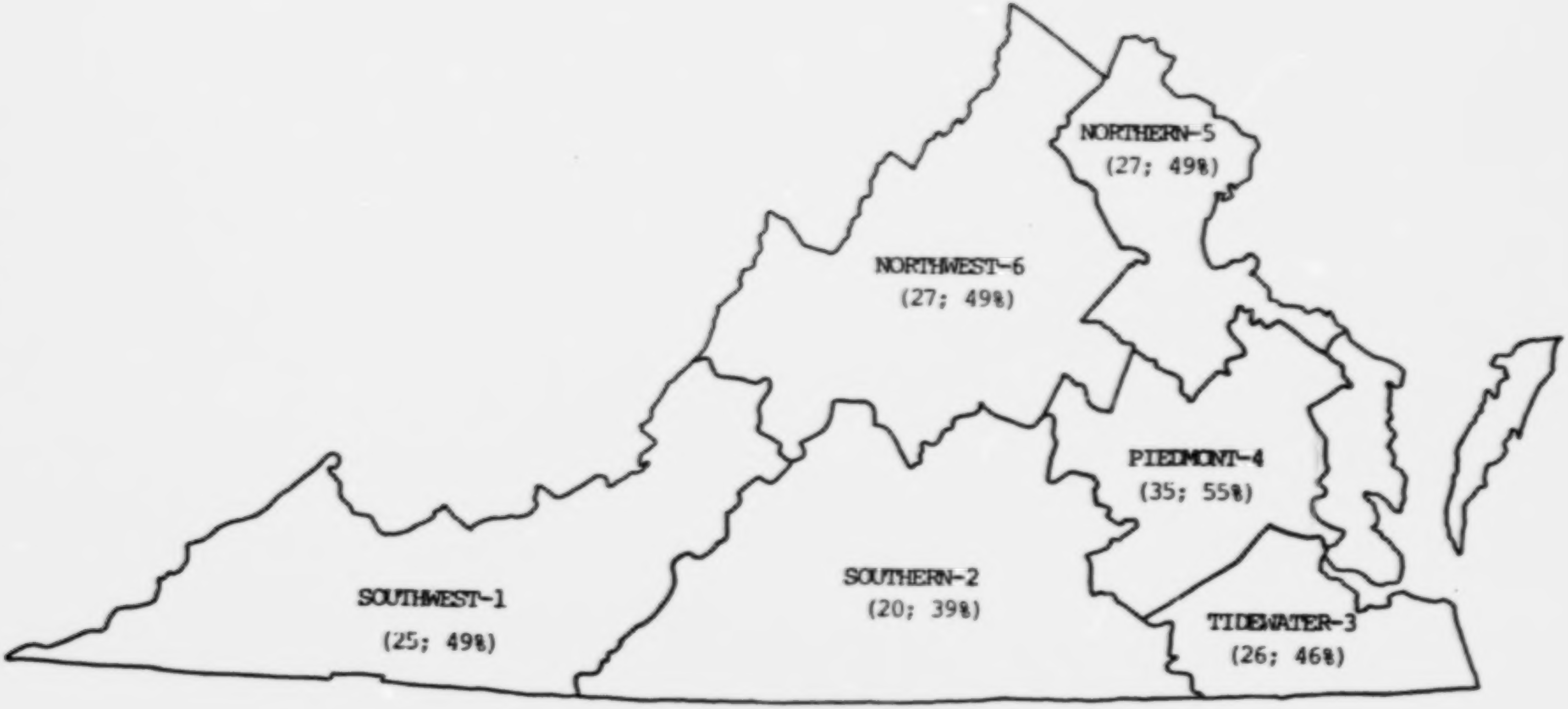

NORTHERN-5
(27; 49%)
NORTHWEST-6
(27; 49%)
PIEDMONT-4
(35; 55%)
SOUTHWEST-1
(25; 49%)
SOUTHERN-2
(20; 39%)
TIDEWATER-3
(26; 46%)

Figure 2. Number of Libraries in Each Region that Currently Utilize Automation in Virginia (proportion is of all libraries in each region responding to the survey), 1985

Several years ago computer networking and library networking implied the need for strict uniformity of equipment, procedures, policies, etc. However, interconnection technologies which include both hardware and software have now evolved to the stage where different systems, based on different policies and procedures, can be linked together. The aim of most of today's networking projects is to minimize the costs of interconnection while simultaneously maximizing the capabilities of the network in terms of functions, services and products supported.

Phase I of the study consisted of assessing the need for a more formal library network in Virginia by surveying libraries, conducting site visits, interviews, and regional hearings, and reviewing documentation on existing levels of automation and networking in the Commonwealth. Important factors entering into the determination that a more formal library networking configuration is required in Virginia are:

- The almost overwhelming need and desire to move to a more formal configuration on the part of librarians in Virginia as determined through the Survey of Virginia Libraries, the regional hearings and interviews conducted during Phase I of this study
- The fact that a considerable amount of networking is already performed in Virginia, although largely on an informal basis
- The substantial investment that has already been made by Virginia libraries and funding agencies in automation and networking, the return on which will only be fully achieved by maximizing the use of machine-readable files and automated systems
- The current status of library automation in general and the perceived need of librarians in Virginia to take advantage of some of the newer technologies that are emerging, e.g., compact laser disks
- The fact that formalizing library networking can help to ensure better levels of performance and effectiveness to patrons
- The current planning for a unified digital telecommunications system to extend throughout the state, and the early consideration of libraries as potential heavy-duty users of such a network

Interlibrary resource sharing, one of the primary objectives of library networking, requires the development of locator tools to facilitate the process of identifying which libraries hold needed materials. The Virginia State Library has been actively engaged in the development of a Virginia database of library holdings. The database currently contains over 2 million unique titles held by 95 libraries and is distributed as CAVALIR (a COM catalog) to 271 libraries throughout the Commonwealth. To date, over $4 million have been invested in retrospective conversion projects which led to the creation and distribution of this database, of which over $1 million were Commonwealth funds. The Virginia database is the only self-contained statewide library database that is being used for current cataloging support and retrospective conversion, as well as for interlibrary loan. Thus, the database is among the most advanced library resource sharing programs in the U.S.

However, the return on the investment of over $4 million will not be fully recouped until all libraries in Virginia are able to use these machine-readable records to their full extent. Each library should, ultimately, be able to search its own holdings database and those of other libraries in a variety of ways, and should be able to retrieve current availability information.

These capabilities are not yet realized even by all libraries participating in the development of the Virginia database, nor by other libraries in the Commonwealth. One purpose of this current study of Virginia libraries is the development of a long-range plan that will enable all libraries in the Commonwealth to participate in automation and networking activities on a statewide basis.

There are a number of important implications associated with the development of a more formal library network in Virginia, including:

- Patrons will gain access to a wider range of library resources statewide
- The performance and effectiveness of Virginia libraries should improve
- Participating libraries should benefit either in terms of cost savings or in terms of improved performance
- Participation in the network will increase communications among librarians throughout the state, thereby keeping librarians abreast of relevant events and developments
- Use of the network will increase demand for network services, which in turn will increase the demand on individual libraries
- Costs will be associated not only with planning, developing, and operating the network, but also with using it
- The Commonwealth of Virginia will become more self-sufficient in terms of meeting the library and information needs of its residents and will derive a greater return on the investment in library services
- The more formal configuration cannot be implemented overnight, and an ongoing effort on the part of all those involved will be required

SECTION 2

NEEDS OF LIBRARIES IN VIRGINIA

The Phase I survey of Virginia libraries and the discussions with various groups of librarians throughout the state identified a number of library needs that might be met by the development of a more formal networking configuration in Virginia and increased utilization of automated systems. The most significant and far reaching need identified by libraries of all types, sizes and locations is the need to be able to **identify library holdings statewide.**

Clearly, Virginia has already begun to develop a statewide database of library holdings. The Computer Company (TCC) supports and maintains the database and produces CAVALIR, the microfiche product which is distributed to libraries. However, the progress made thus far in the development of the database is seen as only the first step. The database contains only 12 percent of the total holdings in the state. A parallel first step has been taken by the Library Advisory Committee of the Council of Higher Education in Virginia (LAC/CHE) in supporting several projects which ultimately will lead to the inclusion of serials holdings in the Virginia database.

Virginia libraries identified the following other needs which could be supported by development of a more formal networking configuration at the regional or statewide level:

- Identification of special and research collections
- Identification of serials holdings
- Access to the holdings of all types of libraries
- Maintenance of reciprocal resource sharing and other arrangements with out-of-state libraries
- Continued participation in multi-state and national library networks
- Document delivery
- Development and implementation of shared systems (regional, multitype)
- Compatibility among automated library systems throughout the state
- Agreement on standards for bibliographic records
- Well defined protocols for network use
- Reimbursement for interlibrary lending of materials in-state
- Funding support
- Sharing of non-collection resources
- Availability of consulting support at the state level
- Education and training
- Negotiation of bulk discounts
- More formal cooperative collection development
- Cooperative storage of infrequently-used materials
- Conservation and preservation
- Improved communications
- Central source of information on meetings and events
- Accommodation of multiple levels of participation
- Tangible returns for network participation
- Formal contract between individual network participants and the suppliers of network services
- Formal framework and guidelines to structure evolving networking initiatives

Libraries also identified the following needs for increased access to automation at the local library level to support library operations:

- Automated circulation systems
- Online public access catalogs (PACs)
- Integration of PACs with automated circulation systems
- Acquisitions
- Linkage of selected acquisitions records with the PAC
- Serials control
- Serials holdings data
- Reference support
- Library administration support
- In-house control of local, state and federal documents
- Scheduling/booking of audiovisual materials and equipment

Based on the expressed needs of libraries in Virginia for statewide networking and for support of library automation at the local library level, we present the following recommendations (Section 3) and plans (Section 4) for networking in the Commonwealth.

SECTION 3

RECOMMENDATIONS

1. A more formal library networking configuration should be developed in Virginia so that citizens of the Commonwealth can have easy and rapid access to the total library and information resources in Virginia.

2. A more formal networking structure should be established through the development/amendment of appropriate legislation. Current legislation does exist which gives the State Library Board responsibility for establishing standards for networking grants, granting funds for networking, establishing standards and priorities for networking, establishing and operating communication centers and other networking services, and for acting upon networking advice presented to the Library Board by the State Networking Users Advisory Board (SNUAB).

   The Virginia library network should be established as a new division of the Virginia State Library (VSL) to take advantage of the existing legislation. This division should be established with new funds and new positions.

3. The network organization will require its own staff including, a minimum of five positions in FY1988:

   - Director
   - Automation Consultant
   - Telecommunications Consultant
   - Administrative Assistant/Secretary
   - Typist

   In FY1993 an education/training consultant and a typist should be hired, and in FY1998 a preservation/conservation consultant and an administrative assistant should be hired.

   These positions should be established at the outset as new VSL staff positions. It is important that these positions be created to distinguish VSL Network Division staff with responsibilities to all types of libraries in Virginia from other VSL staff with responsibilities primarily to public and institutional libraries.

4. Certain network support services should be obtained under contract, since it is not necessary to duplicate services available elsewhere. Specific services to be obtained under contract include:

   - support of the Virginia database, including provision of online access to the database
   - production of CAVALIR and other products
   - provision of the capability for online placement of interlibrary loan requests and other online messaging (e.g., electronic mail, electronic bulletin board)

   Other network services also may be obtained from contractors. However, detailed performance standards should be specified in the RFP(s) and the performance of the contractor(s) should be monitored carefully.

5. The Virginia database should be maintained and CAVALIR produced by TCC until the current contract expires. TCC appears to offer the best mix of services and cost at the present time but other services such as SOLINET, Auto-Graphics, UTLAS, etc. should be offered the opportunity to bid for the new contract.

6. The network should be governed by the State Library Board, with the SNUAB and the State Librarian providing input and advice on the development of networking policies. The SNUAB should establish various subcommittees to formulate draft policies on networking issues for submission to the State Library Board and to the State Librarian. Representation on the subcommittees should include appropriate members from the statewide library community.

   The State Librarian should review networking policies drafted by the SNUAB and should recommend to the State Library Board that the policies be approved or modified. The administration of the implementation of networking policies approved by the State Library Board should be the responsibility of the State Librarian and of the Network Division Director.

   The entire SNUAB, or a subcommittee, should meet periodically with the State Librarian and the Network Division Director in order to discuss networking issues requiring policy guidelines.

   In order that the SNUAB be fully representative of the library community in Virginia, it is recommended that an expanded SNUAB be formed to include the following members:

   - 2 public librarians (1 representing large public libraries and 1 representing small public libraries)
   - 2 academic librarians (1 representing public academic institutions and 1 representing private academic institutions)
   - 1 community college librarian
   - 2 school librarians (1 representing public schools and 1 representing private schools)
   - 2 special librarians (1 representing publicly-funded special libraries and 1 representing privately-funded special libraries)
   - 1 institutional librarian or the institutional consultant at VSL

   Legislation should be modified so that SNUAB members are appointed by the governor from a list of candidates nominated by the professional library associations in Virginia (VLA, VSLA, VEMA, etc.). Each member of the Board should be appointed for a three-year term with one third of the Board rotating off each year.

   The SNUAB, or a subcommittee, should meet jointly with the executive committees or designated representatives of the various professional organizations/groups in the state to develop strategies for obtaining legislative support and funding for implementation of the recommendations made in this report for network development and implementation. In the future, a joint meeting with representatives of these organizations/groups should be convened to develop appropriate mechanisms for obtaining regular feedback on network policies, services and operations from the respective membership/interest groups.

The SNUAB should continue to meet regularly at appropriate intervals determined by its members. Minutes of these meetings should be distributed to the State Librarian, the Library Coordinator of the CHE, the Supervisor of School Libraries and Information Technology, a designated administrator at the Community College System, the president and/or designated representative of the respective professional organizations/groups in Virginia and to the designated regional networking representatives. When necessary, these various representatives should prepare written comments on their concerns regarding any recommendations made by the SNUAB and should submit these documents to the SNUAB Secretary for future discussion and action by the SNUAB.

7. The new Network Division of VSL should have the primary responsibility in the Commonwealth for the coordination of library automation and networking activities, provision of advice and consulting to support such activities, the design and offering of needed education and training programs for all levels of library personnel, and development of other programs as necessary.

   In particular, the new networking organization should be responsible for ensuring:

   - The development and adoption of standards for library automation and network participation in the areas of:
     - bibliographic databases and holdings statements
     - automated systems
     - telecommunications
     - interlibrary loan protocols and procedures
     - electronic mail
     - electronic document delivery
     - reporting statistics, automation costs, and other library management information
   - The coordination of the maintenance, expansion, and provision of access to the Virginia database, including specifically:
     - continued maintenance of the database, with an increased number of libraries performing online maintenance
     - expansion of the database to include the book and non-book holdings of additional libraries whose machine-readable records are currently available in MARC format, or which could be converted to MARC format; libraries with special or unique collections should be (converted and) included in the database as soon as possible; the holdings of remaining collections should be converted and included in the state database over the planning period
     - expansion of the database to include the serial titles and holdings information included in the Tidewater Union List of serials, in the UVA-VPI serials conversion project, and in similar union list projects
     - enhancement of the location symbols in the database to include regional designators
     - immediate provision of online access to the database to an increased number of libraries, beginning with libraries represented in the database
     - distribution of CAVALIR on microfiche with replacement by a laser disk version as soon as possible, with more frequent distribution of updates
     - provision of an interlibrary loan requesting capability on the system supporting the database so that libraries which are online can place requests at the time of the search
     - use of the database as much as possible to support ongoing retrospective conversion projects
     - assessment of the feasibility of phasing out the centrally-stored Virginia database and providing access to statewide holdings data in a distributed network as more libraries become automated and interfaces betweeen systems become available

- The provision, as soon as possible, of a unified communications/electronic mail network for libraries across the Commonwealth, to support interlibrary loan requesting, calendar of events, and other messaging as necessary

- The development of standard charges for various types and levels of network service

- The coordination, monitoring and evaluation of statewide interlibrary loan activities, and the development of a compensation plan for net lenders to in-state libraries. Libraries which are compensated should not charge for loans and should provide service within established standard turnaround times. This activity should be closely associated with the development of protocols and procedures for interlibrary loan

- The statewide coordination of regionally-developed interlibrary delivery systems with identification of switching points between regional systems

- The serious consideration of telefacsimile transmission for delivery of interlibrary loan requests for photocopies; at a minimum, transceivers should be located at each library contributing to the database and at regional or other nodes in the network

- The coordination of acquisition of telefacsimile transceivers by libraries in Virginia so that all equipment purchased is compatible

- The investigation of various commercial document delivery services for provision of requests for copies of journal articles; these costs should be compared with costs associated with in-house processing of requests using telefacsimile

- The design and development of a variety of statewide, regional, and type-of-library database products, available in a variety of formats, covering serial, audiovisual, reference, and special collection holdings

- The coordinated development of a cooperative collection development policy for Virginia libraries. This activity should be closely associated with the development of regional repositories

- The coordination and support for the design and development of regional respository programs for infrequently-used materials

- The provision of services related to the preservation and conservation of materials, either through a contract with one of the multi-state regional services on the East Coast, or through the establishment of a center for preservation and conservation in Virginia

- The design and development of appropriate continuing education and training programs for all levels of library personnel, with some form of credentialing for participants. These programs should be provided statewide and should be coordinated with the activities of the Title III Continuing Education Committee

- The provision of consulting services to libraries in the Commonwealth in the areas of:

  - automation
  - retrospective conversion
  - telecommunications
  - preservation and conservation

- The investigation of various volume discounts for equipment, materials, online database services, document delivery services, etc.

- The development and coordination of shared regional (or sub-regional) automated systems to support the automation needs of libraries of all types and sizes within the state, as required. Many different systems could be used, but the following are preferable as they are aleady in use in one or more libraries in the state (CLSI, DataPhase, DRA, Dynix, Geac, LAMBDA, LS/2000, NOTIS, VTLS)

- The adoption of nationally- or vendor-developed transparent interfaces to link dissimilar automated library systems to form distributed networks

- The investigation of methods for providing network support monies directly to participating libraries, rather than to the institutions to which they belong, since monies often dissipate into general overhead categories or other institutional projects

8. Until the proposed Department of Information Technology (DIT) statewide communications network is in place and the Virginia library network organization becomes operational, ALANET should be used to provide immediate improvement in communications among all types of libraries in the Commonwealth.

   ALANET should be used for interlibrary communications among all public, academic and special libraries and school divisions because of this communications network's distinct advantages. The school divisions will act as access points to other types of libraries on behalf of school libraries, via ALANET. School libraries should investigate the potential use of VNET to support interlibrary communication.

   When the DIT network becomes operational, investigation should be made of the cost-effectiveness of use of that network as compared with continued use of ALANET and, if appropriate, VNET.

   The development of shared regional automated systems should be encouraged. Such systems can handle entire regions or sub-regions but should allow all types of libraries to take advantage of automation. Note that these developments are not bound by existing regional designations.

9. When the network is fully established and operational, it should become a totally self-supporting independent corporation. Initially the network should receive "seed" money to establish itself as a viable organization, but revenues should be generated from provision of services beyond the basic level. Service charges should be competitive with charges for similar services provided by other organizations.

   When the network is able to support itself, the feasibility of spinning it off as an independent not-for-profit organization should be examined.

10. Network participants should have formal contracts with the network organizations (both state and regional) for provision of network services.

11. All libraries in the Commonwealth (public, academic, institutional, school, special) should be eligible for membership in the statewide network. A basic annual membership fee (approximately $75) should be charged to all network members in return for basic network services:

    - Information about networking activities, automation developments, telecommunications developments, education and training offerings, calendar of events, etc.
    - Free copies of CAVALIR issued at least 3 times per year
    - Advice and consultation relating to automation, retrospective conversion, telecommunications, and preservation and conservation
    - Mailbox on ALANET for interlibrary communications of all types, including ILL requesting

    In addition to basic network membership, a range of membership categories should be developed reflecting different levels of participation in network services and activities:

    - Regional nodes - full participants with in-house or shared MARC-based automated library systems, who will provide certain services within their respective regions so non-automated libraries can access automated network services; eligible for compensation for services provided;

- Full participation in all automated activities as a contributor to the Virginia database and a supplier of interlibrary loans; eligible for interlibrary loan compensation;
- Partial participation in automated activities as a non-contributor to the database, but accessing the database using either a microcomputer or terminal, and having direct access to the electronic mail/communications network;
- Non-automated participation - receiving CAVALIR on fiche, and communicating requests by mail or telephone to designated regional nodes.

12. For school libraries, membership in the network organization is recommended for all school divisions, so that they may represent their school libraries and support their needs at the division level or through a designated school network node or nodes (e.g., a large secondary school with advanced level instruction). The information needs of many school libraries are expected to be met through inter- and intra-division communications on VNET. If VNET is not made available to school libraries, individual libraries should consider the use of ALANET or the DIT network as appropriate.

    Each school division should develop a database of learning resources available within the division; teaching kits and instructional materials are of particular importance for inclusion.

13. The basic configuration of the network should be a series of interconnected nodes. The predominant type of node should be regional multitype groups of libraries. However, other nodes such as multi-branch libraries in an area, or institutions with multiple libraries, or single libraries, etc. should also be able to participate. The network should be flexible enough to incorporate this variety of different sub-network configurations, so that existing systems and networks can be incorporated into the structure and new configurations can evolve in a variety of ways.

14. The development of regional consortia and expansion of existing consortia should be actively encouraged by the network organization. The regions should:

    - Establish a governance structure and appropriate committees to work on planning, development, and implementation of networking objectives
    - Solicit interest in, and commitment of, libraries of all types within a region to share resources
    - Establish and design procedures and protocols for intraregional sharing of resources and facilities, and procedures for switching from intraregional activities to inter-regional activities
    - Design interlibrary loan procedures and protocols so that the burden is shared by all participating libraries
    - Build regional MARC databases of holdings of all types of materials for input to the Virginia database; in the future, these databases should become primary nodes when the Virginia database is stored in a distributed manner
    - Develop regional directories of expertise, services, and special collections
    - Develop regional delivery services which connect with other regional delivery services in the state
    - Identify potential sites for regional repositories, either within existing library facilities or in commercial warehouse space. Also determine what and how much material needs to be stored, how the materials should be filed/stored, who owns the stored materials, and what costs may need to be reimbursed for use of common storage facilities

- Investigate and implement shared automated systems to support circulation control, online public access catalogs, serials control and acquisitions
- Continue to seek sources of funding for development of multitype library networks

15. Administrators of parent institutions should be kept informed of networking plans so that they will have adequate opportunity to prepare for active participation in various networking activities as they are implemented.

16. The entire process of reporting library statistics should be reviewed because of inconsistencies noted in reporting practices as evidenced in the survey responses. Evaluation of the benefits and effectiveness of network services will be based on library statistics, pre- and post-networking, so it is important to establish a common basis for reporting.

17. The following automation guidelines should be adopted in order to ensure that systems/equipment acquired by Virginia libraries will be compatible with network development, so that these libraries may become active network participants.

Guidelines for Terminals/Microcomputers

- All microcomputers and terminals acquired should be capable of supporting ASCII code.
- All microcomputers and terminals should be capable of supporting the RS 232C communications protocol.
- Microcomputers should preferably be IBM-compatible.
- Libraries should request guidelines for purchasing laser disk players from the Network Division of VSL.

Guidelines for Integrated Library Systems

- Libraries considering local automation should purchase systems supporting the full MARC format if they are to become full participants in the network.
- Libraries not supporting full-MARC should include standard bibliographic identifiers in their machine-readable records (LC number or ISBN, etc.) so that their records could be upgraded later.
- Libraries should acquire systems that are capable of outputting MARC formatted records.
- Libraries should acquire systems that use standard operating systems.
- Libraries preferably should purchase automated library systems that already are in use in Virginia libraries.

SECTION 4

LIBRARY AUTOMATION AND NETWORK DEVELOPMENT PLAN FOR THE COMMONWEALTH OF VIRGINIA

4.1 Statement of Purpose

The purpose of this plan for library automation and network development in Virginia is the provision of a coordinated, but flexible, approach to library automation and networking on a statewide basis so that:

- citizens of the Commonwealth can have easy and rapid access to the total library and information resources in Virginia

- return on investment may be realized for the substantial amount of funds expended already by Virginia libraries to support library automation and networking; this return on investment will be fully achieved only by maximizing the use of existing machine-readable files and automated systems

- benefits from existing automation and networking efforts by Virginia libraries may be optimized to ensure better levels of performance and effectiveness to patrons

- newer information processing technologies (e.g., compact laser disks, electronic mail) may be made available to libraries on a statewide basis and associated volume purchase discounts may be realized

- Virginia libraries as a group may become potential heavy-duty users of the statewide unified digital telecommunications system planned by the Department of Information Technology (DIT)

- libraries in Virginia may maintain their autonomy, as well as reap the benefits of increased cooperation and sharing of resources

4.2 Legal Structure and Goverance of the Network

The legal structure of the proposed Virginia Library Network organization is based on existing legislation (Code of Virginia, Section 42.1-32.1 through 32.7: Networking). This legislation gave the State Library Board the ultimate responsibility for networking activities and established a State Networking Users Advisory Council, now Board (SNUAB), for providing advice to the State Librarian and to the State Library Board on matters relating to networking. The establishment of the Virginia library network as a new division of the State Library will be proposed to the Legislature as the legal structure of the network organization. New funds and new positions will be required to operate the Network Division which will have primary responsibility for the statewide coordination of all activities related to library automation and networking.

The Virginia library network will be governed by the State Library Board, with the SNUAB and the State Librarian providing input and advice on the development of networking policies. The SNUAB will solicit input on networking issues from other libraries, as charged in the existing networking legislation. Note that an expanded SNUAB was recommended in item 6 on page 9 of this report.

4.3 Membership and Levels of Participation

All libraries in the Commonwealth (public, academic, institutional, school, special) will be eligible for membership in the statewide network. A basic annual membership fee (maximum $75) will be charged to all network members in return for basic network services:

- Information about networking activities, automation developments, telecommunications developments, education and training offerings, calendar of events, etc.
- Free copies of CAVALIR issued at least 3 times per year
- Advice and consultation relating to automation, retrospective conversion telecommunications, and preservation and conservation
- Mail box on ALANET for interlibrary communications of all types, including ILL requesting

In addition to basic network membership, a range of membership categories will be developed reflecting different levels of participation in network services and activities:

- Regional nodes - full participants with in-house or shared MARC-based automated library systems, who will provide certain services within their respective regions so non-automated libraries can access automated network services; eligible for compensation for services provided
- Full participation in all automated activities as a contributor to the Virginia database and a supplier of interlibrary loans; eligible for interlibrary loan compensation
- Partial participation in automated activities as a non-contributor to the database, but accessing the database using either a microcomputer or terminal, and having direct access to the electronic mail/communications network
- Non-automated participation - receiving CAVALIR on fiche, and communicating requests by mail or telephone to designated regional nodes

4.4 Network Services

The Virginia Library Network will offer the following services to member libraries:

- provision of a single communications and electronic mail system for all libraries in Virginia
- continued maintenance of the Virginia database
- expansion of the Virginia database to include the holdings of additional libraries
- expansion of the Virginia database to include non-book holdings
- enhancement of the location symbols in the database to include regional designators
- provision of online access to the database to at least all libraries represented in the database
- distribution of CAVALIR on microfiche with ultimate replacement by laser disk, and more frequent distribution of updates

- provision of statewide, regional and type-of-library database products, e.g., relating to serials, audiovisuals, reference materials, special collections, etc.
- provision of an interlibrary loan requesting capability on the system supporting the database so that libraries which are online can place requests at the time of the search
- implementation of a compensation plan for net lenders to in-state libraries
- coordination of regionally developed delivery systems
- coordination of acquisition of telefacsimile transceivers by libraries in Virginia so that all equipment purchased is compatible
- development of standards for network participation, including bibliographic standards, equipment standards, procedural standards, protocols, etc.
- development of a cooperative collection development policy for Virginia libraries
- services related to the preservation and conservation of materials
- consulting and advisory services in the areas of automation, retrospective conversion, telecommunications, and preservation and conservation
- provision of education and training programs statewide
- coordination and support for the design and development of regional repository programs
- investigation of various volume discounts for equipment, materials, online database services, document delivery services, etc.
- monitoring and disseminating information about interfaces to link dissimilar automated library systems, and perhaps actual design and development of interfaces to link systems in Virginia libraries

Each library in Virginia will determine the extent to which it will participate in network services and activities. Charges will be levied for service offerings beyond the basic level. Any service charges will be competitive with charges for similar services provided by other organizations. The network organization will endeavor to become totally self-supporting in the future when it becomes fully established and operational.

4.5 Implementation Activities

The implementation of the recommendations outlined in Section 3 of this report is clearly a long-term process. Although several of the activities are sequence dependent, many can be conducted simultaneously in keeping with our original intent of enabling libraries to progress with automation and networking at their own pace. We have organized the implementation activities into three groups as follows:

- activities to be conducted at the state or network level
- activities to be conducted at the regional or sub-network level
- activities to be conducted at the local level

4.5.1 Activities to be Conducted at the State or Network Level

1. Distribute the long-range Library Automation and Network Development Plan and solicit feedback from libraries across the Commonwealth
2. Convene network strategy meetings between the SNUAB, representatives of appropriate professional organizations, and designated state government library representatives

3. Distribute minutes of the SNUAB meetings to the appropriate representatives of professional organizations, designated state government library representatives, and to the regional network representatives

4. Prepare legislative changes necessary to establish a new division of the State Library as a Virginia Library Network Division

5. Prepare legislative changes necessary to alter the makeup and selection of the SNUAB

6. Lobby legislators as to the importance and value of library networking to Virginia

7. Prepare proposals for the next legislative session for funding of the new State Library Division and the necessary staff positions

8. Set up and convene committees to address issues related to:

   - bibliographic standards
   - automation standards
   - interlibrary loan protocols and procedures
   - interlibrary loan compensation
   - delivery systems
   - regional development
   - collection development
   - repository programs
   - conservation and preservation
   - education and training
   - identification and conversion of special collections
   - statistical and cost reporting standards
   - interfacing systems
   - evaluation of networking
   - liaison with professional organizations and interest groups

9. Hire and employ Network Division Director

10. Hire and employ Network Division staff

11. Continue to provide funds for retrospective conversion projects

12. Continue maintenance of the Virginia database and distribution of CAVALIR

13. Expand the database to include other libraries' machine-readable records which are available in MARC format or which could be converted to MARC format

14. Expand the database to include additional serial titles and holdings statements available in machine-readable form

15. School libraries develop and maintain a database of learning resources available within each division

16. Provide online access to the database to an increasing number of libraries

17. Prepare an RFP (or work order) and contract out the work for enhancement of the location symbols in the Virginia database to include regional designators

18. Conduct a survey to identify libraries owning an IBM PC or compatible microcomputer

19. Select a communications/electronic mail system for ILL request placement and other messaging

20. Offer access to the communications/electronic mail system to all libraries having the necessary equipment

21. Investigate volume discounts for equipment, materials, online database services, document delivery services, etc.

22. Coordinate acquisition of ALANET

23. Investigate potential free use of VNET by school libraries

24. Evaluate use of the DIT network versus use of ALANET and VNET for interlibrary communications

25. Coordinate acquisition of telefacsimile transceivers to expedite transmission of interlibrary loan requests and photocopies

26. Write a short networking column for the State Library newsletter

27. Produce and disseminate more detailed network information for the network members

28. Collect network membership fees

29. Designate certain libraries as regional nodes and announce to membership

30. Investigate alternative vendors for production of CAVALIR on laser disk

31. Develop an RFP for production of CAVALIR on laser disk

32. Prepare an RFP for network support services including:

    - maintenance of Virginia database
    - expansion of the Virginia database
    - online access to the Virginia database
    - production of CAVALIR and other products
    - ILL request placement and electronic mail

33. Determine charges for provision of network services

34. Prepare and sign contracts with members for provision of network services

35. Coordinate regional developments:

    - interlibrary loan
    - document delivery
    - repository programs
    - regional automation systems

36. Evaluate success of networking program

37. Determine when the Virginia database can be stored in a de-centralized/distributed manner

38. Assess feasibility of spinning off the network organization as a not-for-profit organization

4.5.2 Activities to be Conducted at the Regional Level

1. Review the Network Plan

2. Hold regional meetings to discuss the Network Plan

3. Lobby legislative representatives and funding agencies as to the importance of networking to Virginia

4. Automated libraries which contribute to the Virginia database discuss acting as regional nodes

5. Solicit volunteers to serve as regional representatives

6. Elect a regional networking governance group

7. Appoint regional representatives to coordinate with the state-level network organization

8. Set up and convene regional committees to review network-developed standards and programs

9. Review and adopt protocols and standards for:
   - bibliographic data
   - interlibrary loan
   - automation
10. Develop regional document delivery plan
11. Identify special collections and resources in the region
12. Develop regional automation plan
13. Hire and employ automation coordinator
14. Prepare RFP for development of a shared regional automation system
15. Determine charges for provision of shared regional automation services
16. Prepare and sign contracts with all libraries sharing systems and/or services
17. Evaluate success of regional and statewide networking programs
18. Share experiences gained from automation and networking with libraries in region that are not automated and/or do not participate in networking activities

4.5.3 Activities to be Conducted at the Local Level

1. Review Network Plan and discuss possibilities for implementation at the local level
2. Lobby boards, trustees, legislative representatives, and funding agencies as to the importance of networking to Virginia libraries and library users
3. Volunteer for participation in regional networking committees
4. Purchase appropriate equipment and pay fees to access the communications/ electronic mail system
5. Use communications system/electronic mail to facilitate interlibrary communications
6. Join the Virginia library network
7. Select appropriate level of participation
8. Determine whether library could act as a regional node
9. If library is not automated, consider alternatives for automation:
   - purchase a MARC-based automated library system
   - share the purchase of a MARC-based automated library system with another library or libraries
   - become a user of a shared regional system
10. Seek funding for retrospective conversion, as required
11. Convert collection, as required
12. Contribute holdings data for inclusion in the Virginia database
13. Update holdings information in the Virginia database
14. Pay appropriate fees for use of regional and state-level networking services
15. Evaluate success of regional and statewide networking programs

4.5.4 Schedule for Implementation

The following pages present a 15-year implementation schedule for automation and network development at the state or network level, at the regional level, and at the local level.

4.6 Projected Costs

Projected costs to perform the networking activities at the state or network level are displayed in Table 1. Details describing how the costs were derived are included in Appendix A of the Phase II report. Costs are included for the following implementation activities:

- Distribute the plan
- Convene meetings
- Employ a Network Director and Network Division staff
- Continue retrospective conversion projects
- Maintain/expand the Virginia database
- Produce CAVALIR on laser disk
- Add regional designators to holdings symbols in the Virginia database
- Conduct a survey of PC use in Virginia libraries

Other implementation activities will be conducted by the Network personnel and will not incur additional costs.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE STATE OR NETWORK LEVEL: 1986 - 2001

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1. Distribute the long-range Library Automation and Network Development Plan and solicit feedback from libraries across the Commonwealth	x															
2. Convene network strategy meetings between the SNUAB, representatives of appropriate professional organizations, and designated state government library representatives	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
3. Distribute minutes of the SNUAB meetings to the appropriate representatives of professional organizations, designated state government library representatives, and to the regional network representatives	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
4. Prepare legislative changes necessary to establish a new division of the State Library as a Virginia Library Network Division	x															
5. Prepare legislative changes necessary to alter the makeup and selection of the SNUAB	x															
6. Lobby legislators as to the importance and value of library networking to Virginia	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
7. Prepare proposals for the next legislative session for funding of the new State Library Division and the necessary staff positions	x															

KEY:

——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE STATE OR NETWORK LEVEL: 1986 - 2001 (CONTINUED)

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
8. Set up and convene committees to address issues related to: • bibliographic standards • automation standards • interlibrary loan protocols and procedures • interlibrary loan compensation • delivery systems • regional development • collection development • repository programs • conservation and preservation • education and training • identification and conversion of special collections • statistical and cost reporting standards • interfacing systems • evaluation of networking • liaison with professional organizations and interest groups	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9. Hire and employ Network Division Director			x	—	—	—	—	—	—	—	—	—	—	—	—	—
10. Hire and employ Network Division staff				x	—	—	—	x	—	—	—	—	x	—	—	—
11. Continue to provide funds for retrospective conversion projects	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12. Continue maintenance of the Virginia database and distribution of CAVALIR	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13. Expand the database to include other libraries' machine-readable records which are available in MARC format or which could be converted to MARC format	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

KEY: ——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE STATE OR NETWORK LEVEL: 1986 - 2001 (CONTINUED)

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
14. Expand the database to include additional serial titles and holdings statements available in machine-readable form	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
15. School libraries develop and maintain a database of learning resources available within each division			———	———	———	———	———	———	———	———	———	———	———	———	———	———
16. Provide online access to the database to an increasing number of libraries	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
17. Prepare an RFP (or work order) and contract out the work for enhancement of the location symbols in the Virginia database to include regional designators	x															
18. Conduct a survey to identify libraries owning an IBM PC or compatible microcomputer	x															
19. Select a communications/electronic mail system for ILL request placement and other messaging	x															
20. Offer access to the communications/electronic mail system to all libraries having the necessary equipment	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
21. Investigate volume discounts for equipment, materials, online database services, document delivery services, etc.	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
22. Coordinate acquisition of ALANET	———	———	———													
23. Investigate potential free use of VNET by school libraries	x———	———	———													
24. Evaluate use of the DIT network versus use of ALANET and VNET for interlibrary communications		———	———													
25. Coordinate acquisition of telefacsimile transceivers to expedite transmission of interlibrary loan requests and photocopies			———	———	———	———	———	———	———	———	———	———	———	———	———	———
26. Write a short networking column for the State Library newsletter	———	———	———	———												
27. Produce and disseminate more detailed network information for the network members				———	———	———	———	———	———	———	———	———	———	———	———	———

KEY:

——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE STATE OR NETWORK LEVEL: 1986 - 2001 (CONTINUED)

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
28. Collect network membership fees				x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
29. Designate certain libraries as regional nodes and announce to membership				x												
30. Investigate alternative vendors for production of CAVALIR on laser disk	———	———														
31. Develop an RFP for production of CAVALIR on laser disk		x														
32. Prepare an RFP for network support services including:				———												
• maintenance of Virginia database																
• expansion of the Virginia database																
• online access to the Virginia database																
• production of CAVALIR and other products																
• ILL request placement and electronic mail																
33. Determine charges for provision of network services					x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
34. Prepare and sign contracts with members for provision of network services					x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
35. Coordinate regional developments:	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
• interlibrary loan																
• document delivery																
• repository programs																
• regional automation systems																
36. Evaluate success of networking program					x———	x———	x———	x———	x———	x———	x———	x———	x———	x———	x———	x
37. Determine when the Virginia database can be stored in a de-centralized/distributed manner										———	———	———	———	———	———	———
38. Assess feasibility of spinning off the network organization as a not-for-profit organization															———	———

KEY:
——— = on-going activities; x———x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE REGIONAL LEVEL: 1986 - 2001

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1. Review the Network Plan	x															
2. Hold regional meetings to discuss the Network Plan	——															
3. Lobby legislative representatives and funding agencies as to the importance of networking to Virginia	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
4. Automated libraries which contribute to the Virginia database discuss acting as regional nodes	———	———	———	———												
5. Solicit volunteers to serve as regional representatives	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
6. Elect a regional networking governance group	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x
7. Appoint regional representatives to coordinate with state-level network organization			x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
8. Set up and convene regional committees to review network-developed standards and programs			———	———	———	———	———	———	———	———	———	———	———	———	———	———
9. Review and adopt protocols and standards for:				———	———	———	———	———	———	———	———	———	———	———	———	———
● bibliographic data																
● interlibrary loan																
● automation																
10. Develop regional document delivery plan			———	———												
11. Identify special collections and resources in the region	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
12. Develop regional automation plan			———	———	———											
13. Hire and employ regional automation coordinator				x——	———	———	———	———	———	———	———	———	———	———	———	———
14. Prepare RFP for development of a shared regional automation system				———	———											

KEY:
——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE REGIONAL LEVEL: 1986 - 2001 (CONTINUED)

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
15. Determine charges for provision of shared regional automation services						x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
16. Prepare and sign contracts with all libraries sharing systems and/or services						x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
17. Evaluate success of regional and statewide networking programs					x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
18. Share experiences gained from automation and networking with libraries in region that are not automated and/or do not participate in networking activities																

KEY:
——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE LOCAL LEVEL: 1986 - 2001

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1. Review Network Plan and discuss possibilities for implementation at the local level	—	—														
2. Lobby boards, trustees, legislative representatives and funding agencies as to the importance of networking to Virginia libraries and library users	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3. Volunteer for participation in regional networking committees	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4. Purchase appropriate equipment and pay fees to access the communications/electronic mail system		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
5. Use communications system/electronic mail to facilitate interlibrary communications		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6. Join the Virginia Library Network				x	x	x	x	x	x	x	x	x	x	x	x	x
7. Select appropriate level of participation				x	x	x	x	x	x	x	x	x	x	x	x	x
8. Determine whether library could act as a regional node	—	—	—	—												
9. If library is not automated, consider alternatives:	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
• purchase a MARC-based in-house automated library system																
• share the purchase of a MARC-based automated library system with another library or libraries																
• become a user of a shared regional system																
10. Seek funding for retrospective conversion, as required	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11. Convert collection, as required	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

KEY:

——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE LOCAL LEVEL: 1986 - 2001 (CONTINUED)

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
12. Contribute holdings data for inclusion in the Virginia database	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
13. Update holdings information in the Virginia database	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
14. Pay appropriate fees for use of regional and state-level networking services				x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
15. Evaluate success of regional and statewide networking programs					x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x

KEY:

——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

TABLE 1

NETWORK COSTS
($ x 1,000)

Activities	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1) Distribute plan	8															
2) Convene meetings	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
9) Employ Director	-	-	58	61	63	66	69	72	76	79	83	86	90	94	98	103
10) Employ staff:																
a. Personnel	-	-	110	115	120	126	131	191	199	208	217	227	295	308	322	336
b. Other			40	5	5	5	5	19	5	5	5	5	19	5	5	5
11) Continue retrospective conversion	282	564	752	940	940	940	940	940	940	752	645	376	94	94	94	94
12-14 & 16) Maintain database	154	154	172	204	356	615	656	623	332	332	332	332	332	332	332	332
12) Produce CAVALIR on laser disk	45	53	60	75	90	105	120	135	150	165	172	180	180	180	180	187
17) Enhance location symbols	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18) Conduct PC survey	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	506	776	1,197	1,405	1,579	1,862	1,926	1,985	1,707	1,546	1,378	1,211	1,015	1,018	1,036	1,062

STUDY TO DEVELOP A LONG-RANGE LIBRARY AUTOMATION AND NETWORK DEVELOPMENT PLAN FOR THE COMMONWEALTH OF VIRGINIA

PHASE I REPORT

King Research, Inc.
6000 Executive Boulevard, Rockville, Maryland 20852 (301) 881-6766

STUDY TO DEVELOP A LONG-RANGE LIBRARY AUTOMATION AND NETWORK DEVELOPMENT PLAN FOR THE COMMONWEALTH OF VIRGINIA

PHASE I REPORT

August 31, 1985

Prepared by:

Jose-Marie Griffiths, Ph.D.
Donald W. King
Lawrence Lannom
Paula Meise Strain

King Research, Inc.
6000 Executive Boulevard
Rockville, Maryland 20852
(301) 881-6766

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY i

SECTION 1 INTRODUCTION 1

SECTION 2 BACKGROUND 4

2.1 Evolution of Library Networking in Virginia 4

2.2 Library Networking Projects in Virginia 10

2.2.1 The Virginia Database and CAVALIR 10
2.2.2 The Richmond Area Multitype Library Network 12
2.2.3 The Lynchburg Area Library Cooperative 14
2.2.4 Networking in Northern Virginia 14
2.2.5 Networking in the Tidewater Area 16
2.2.6 Other Multitype Library Networks in Virginia 17
2.2.7 Networking in Virginia by Single Type of Library 20

2.3 Library Networking Trends 23

SECTION 3 STUDY METHODS 26

3.1 Introduction 26

3.2 Project Advisory Committee 27

3.3 Review of Background Documentation 28

3.4 Survey of Libraries in Virginia 30

3.5 Survey of State Library Agencies 31

3.6 Site Visits, Interviews, and Meetings with Library Representatives 33

3.7 Regional Hearings 34

SECTION 4 PRESENT LIBRARY ENVIRONMENT IN VIRGINIA 36

4.1 Introduction 36

4.2 Library Resources and Activities 36

4.3 Library Networking in Virginia 41

4.4 General Automation 52

TABLE OF CONTENTS (CONTINUED)

Page

SECTION 5 NEEDS AND CONCERNS OF VIRGINIA LIBRARIES 63

5.1 Library Needs 63

5.2 Concerns Regarding the Formalizing of Library Networking in Virginia 68

SECTION 6 ANALYSIS OF STATEWIDE NETWORKING ACTIVITIES IN OTHER STATES 75

6.1 States with a Statewide Database and a Formal Network Structure 75

6.2 States Which Have Selected a Vendor for a Statewide Integrated Library System 76

6.3 States Actively Planning for an Integrated System 77

6.4 States with a Statewide Database and Informal Network 77

6.5 States Considering Networking Plans 79

SECTION 7 EVALUATION OF EXISTING LIBRARY AUTOMATION AND NETWORKING CONFIGURATIONS IN VIRGINIA 82

7.1 Introduction 82

7.2 Alternative Networking Configurations 83

7.2.1 Approach 1. Totally Centralized 83
7.2.2 Approach 2. Decentralized by Type of Library 85
7.2.3 Approach 3. Decentralized by Region 87
7.2.4 Approach 4. Totally Decentralized 88

7.3 Technical Assessment 89

7.4 Economic Assessment 97

7.4.1 Expand Access to CAVALIR 97
7.4.2 Expand Online Access to CAVALIR 101
7.4.3 Expand Contents of the Virginia Database 101
7.4.4 Provide Electronic ILL Mechanism 101
7.4.5 Expand Automation to Support Circulation for Libraries in Virginia 101
7.4.6 Expand Automation to Support Online Public Access Catalogs 102

7.5 Operational Assessment 103

7.6 Political Assessment 104

TABLE OF CONTENTS (CONTINUED)

Page

SECTION 8 RECOMMENDATIONS FOR IMPROVING THE CURRENT NETWORKING CONFIGURATION IN VIRGINIA 107

8.1 Is a More Formal Networking Configuration Required? 107

8.2 How Could a More Formal Network be Developed in the State? 108

8.3 What are the Implications of Developing a More Formal Network in Virginia? 109

BIBLIOGRAPHY

APPENDIX A STATE BY STATE ANALYSIS OF LIBRARY NETWORKING ACTIVITIES

APPENDIX B SURVEY RESULTS

APPENDIX C QUESTIONNAIRE

APPENDIX D SURVEY RESPONDENTS

LIST OF FIGURES

		Page
Figure 1	The Six Regions of Virginia	32
Figure 2	Number of Libraries in Each Region Responding to the Survey, 1985	39
Figure 3	Number of Libraries in Each Region that Belong to Library Cooperatives or Networks in Virginia, 1985	44
Figure 4	Number of Libraries in Each Region that Currently Utilize Automation in Virginia, 1985	58
Figure 5	LATAs in Virginia	98
Figure 6	Virginia Independent Telephone Companies	99

LIST OF TABLES

		Page
TABLE 1	Survey Respondents, by Type of Library	37
TABLE 2	Survey Respondents, by Size of Library	38
TABLE 3	Networking Activities, by Type of Library	42
TABLE 4	Networking Activities, by Size of Library	43
TABLE 5	Perceived Benefits of Networking, by Size of Library	46
TABLE 6	Importance of Network Services, by Type of Library	48
TABLE 7	Importance of Issues on Cooperative Activities for Inclusion in Formal Networking Plan, by Type of Library	49
TABLE 8	Conditions that Encourage Cooperation, by Type of Library	51
TABLE 9	Readiness to Implement Own Automation Activities, by Type of Library	53
TABLE 10	Readiness to Engage in Automated Networking Activities, by Type of Library	54
TABLE 11	Current Use of Automation, by Type of Library	55
TABLE 12	Current Use of Automation, by Size of Library	57

EXECUTIVE SUMMARY

This study of library automation and networking in Virginia is to be conducted in two phases. The first phase of this project will determine whether or not a more formal networking configuration is needed and should be pursued in Virginia, and what the costs and benefits of a more formal configuration will be. The second phase of the project will focus on the development of alternative strategies for the evolution of the more formal configuration and a phased implementation plan for library networking in Virginia. Performance of Phase II of the study is dependent upon Phase I findings and recommendations which clearly demonstrate that a more formal network of libraries is needed in the state.

Both factual and attitudinal data on the current library automation and networkng environment in Virginia were gathered using the following techniques:

- review of background documentation on libraries and networking in Virginia;
- a survey of all types of libraries in the state;
- a telephone survey of state library agencies to identify current statewide networking activities in other states;
- site visits to selected libraries and meetings/interviews with designated members of the library community and with representatives of related professional, state, research, and commercial organizations;
- public hearings in various geographic regions of Virginia.
- coordination of this study with a Project Advisory Committee representating appropriate state government organizations and all types of libraries in the state.

After a thorough analysis of data gathered and of library trends in general, we determined that a more formal networking configuration is required in Virginia. Important factors entering into this determination included:

- the almost overwhelming need and desire to move to a more formal configuration on the part of librarians in Virginia as determined through the Survey of Virginia Libraries, the regional hearings and interviews;
- the fact that a considerable amount of networking is already performed in Virginia, although largely on an informal basis;
- the substantial investment that has already been made by Virginia libraries and funding agencies in automation and networking, the return on which will only be fully achieved by maximizing the use of machine-readable files and automated systems;
- the current status of library automation in general, and the perceived need of librarians in Virginia to take advantage of some of the newer technologies that are emerging, e.g., compact laser disks;
- the fact that formalizing library networking can help to ensure better levels of performance and effectiveness to patrons;
- the current planning for a unified digital telecommunications system to extend throughout the state, and the early consideration of libraries as potential heavy-duty users of such a network.

There are a number of important implications associated with the development of a more formal library network in Virginia including:

- Patrons will gain access to a wider range of library resources statewide.

- The performance and effectiveness of Virginia libraries should improve.

- There should be benefits to participating libraries either in terms of cost savings or in terms of improved performance.

- Participation in the network will increase communications among librarians throughout the state, thereby keeping librarians abreast of relevant events and developments.

- Use of the network will increase demand for network services, which in turn will increase the demand on individual libraries.

- There will be costs associated not only with planning, developing, and operating the network, but also with using it.

- The Commonwealth of Virginia will become more self-sufficient in terms of meeting the library and information needs of its residents and will derive a greater return on the investment in library services.

- The more formal configuration cannot be implemented overnight, and an ongoing effort on the part of all those involved will be required.

In Phase II of this study, the implications (both positive and negative) will be carefully mapped out to ensure the most appropriate network development process which will optimize benefits while minimizing costs.

Information technology has evolved to support library operations and interlibrary communications. However, if individual libraries are left to make individual decisions about acquiring equipment, systems and services, the end result could be a series of isolated, incompatible automated library systems which can only be used locally. Automated library networks can only develop successfully through careful planning and coordination by all participating libraries.

SECTION 1

INTRODUCTION

This study of library automation and networking in Virginia is to be conducted in two phases. The first phase of this project will determine whether or not a more formal networking configuration is needed and should be pursued in Virginia, and what the costs and benefits of a more formal configuration will be. The second phase of the project will focus on the development of alternative strategies for the evolution of the more formal configuration and a phased implementation plan for library networking in Virginia. Performance of Phase II of the study is dependent upon Phase I findings and recommendations which clearly demonstrate that a more formal network of libraries is needed in the state.

Since the late 1960s, libraries have recognized the benefits of resource sharing. Various networking activities developed in the early days of cooperative ventures, however, are no longer appropriate in terms of structure, service offerings, technology utilization, etc. The Commonwealth of Virginia has decided that the time has come to review and analyze the existing resource sharing environment and structure within which its libraries operate.

It appears that one of the forces behind this review is the technology that has evolved to support library operations and interlibrary communications. However, if individual libraries are left to make individual decisions about acquiring equipment, systems and services, the end result could be a series of isolated, incompatible automated library systems which can only be used locally. Automated library networks can only develop successfully through careful planning and coordination by all participating libraries.

Several years ago computer networking and library networking implied the need for strict uniformity of equipment, procedures, policies, etc. However interconnection technologies which include both hardware and software have now evolved to the stage where different systems, based on different policies and procedures, can be linked together. The aim of most of today's networking projects is to minimize the costs of interconnection while simultaneously maximizing the capabilities of the network in terms of functions, services and products supported.

The approach that King Research advocates in the development of regional and statewide library networks has three major objectives:

- Flexibility — It is important to develop a networking configuration that enables libraries to participate in and benefit from networking activities regardless of their type, size, geographic location, or level of automation. The network must allow for local and regional differences and not be imposed on Virginia libraries as the service to adopt. Individual libraries should be able to retain their involvement in other networking activities, and to select their level of participation in a Virginia library network. Finally, the network must be configured in such a way that new technologies can be incorporated as they become available at reasonable cost.

- Appropriate technology -- The network should be supported by technologies with a level of sophistication sufficient to the needs that are being addressed. Many automation and networking projects in the past have adopted overly sophisticated technologies, at too high a cost, for the task at hand. The network should also be accessible to many levels of technology, as well as to libraries with no technology.

- Compatibility -- The key to successful networking projects is compatibility of procedures, processes, technologies, etc., and not absolute uniformity, as is often supposed. Guidelines for compatibility should be developed, and libraries that follow the guidelines should be able to reap the benefits of participating in the network.

As the project team evaluates the existing levels of library automation and networking in Virginia and assesses the potential need for a more formalized library network structure in the state, the above-listed network development objectives will provide the basis for any network planning which may be undertaken as part of this study.

SECTION 2

BACKGROUND

2.1 Evolution of Library Networking in Virginia

The need for increased library cooperation and networking has been a direct outgrowth of the proliferation of publishing, library users' increasing demands for library service, and the inability of individual libraries to satisfy all of these demands for information and service. In 1975 the National Commission on Libraries and Information Science published its program objectives, Toward a National Program for Library and Information Service: Goals for Action, which gave nationwide visibility to the concept and importance of library networking.

Organizations within the Commonwealth of Virginia took a number of important steps in planning for increased interlibrary cooperation in order to provide for more effective use of library resources in the state. A brief summary of these major networking initiatives is presented in the following paragraphs.

Various consortia representing single and multiple types of libraries were established in the state to facilitate discussion, planning, and implementation of cooperative activities. Other librarians worked together on an informal basis to develop mutually beneficial programs. In the late 1970's, a number of these consortia and informal groups were exploring the possibilities for use of common systems to support their needs for library automation and cooperation. A more complete discussion of some of these cooperative efforts in Virginia is presented in Section 2.2 of this report.

In 1977, the Library Advisory Committee of the Council of Higher Education in Virginia (LAC/CHE) prepared a formal statement of the group's networking objectives in the Virginia Plan for Academic Library Cooperation. This group of academic library directors identified the need for a number of cooperative programs including creation of a statewide library collection development policy, provision of access to serials holdings statewide, development of a state interlibrary loan policy, and cooperative means of storage for little-used materials.

In that same year, the Virginia State Library (VSL) established a statewide interlibrary loan referral center within its General Library Branch. TWX and WATS lines were used for long distance communications, and service was provided to all types of libraries. VSL continues to operate this service, searching OCLC/SOLINET for those libraries in the state which have no other access to OCLC and notifying the requesting libraries of the locations from which needed materials may be borrowed. The interlibrary loan center processed approximately 15,000 loan requests in FY 1984-1985, making it the largest in-state lender.

In 1978 the State Library funded a feasibility study for development of a computer-based library network for public and academic libraries in the Tidewater region. Development of a Tidewater community bibliographic database in full MARC II format was recommended to support a union catalog for the libraries in the area, as well as supporting operation of a regional circulation system. The economic and operational needs for development of a network were clearly demonstrated, and the proposed network design was intended to serve as a model for development of library networks in other regions of the state. The Tidewater network recommended by the 1978 Synectics Corporation study has not been implemented; it may have been proposed before the conditions in the state were suitable for development of such a formal network with shared automated systems. A number of other cooperative projects in the Tidewater area have been very successful and are described in Section 2.2.5 of this report.

Another project was funded by the State Library in 1978 to study the feasibility of developing an integrated statewide library network system. This study by The Computer Company of Richmond was conducted concurrently with another State Library funded project, the initial development of the Virginia database using archival tapes from OCLC member libraries in the state and the distribution in 1979 of a product from this database, the first computer-output-microform edition of CAVALIR (Catalog of Virginia Library Resources). (Section 2.2.1 of this present report contains a detailed description of the Virginia database and CAVALIR). The feasibility study identified prospects for further statewide network development using the newly-developed Virginia database. It was noted that large libraries in the state would require access to a database larger than the combined LC MARC-Virginia database in order to provide a broader base for obtaining necessary cataloging data; membership in large interstate networks was recommended to provide the required support. The results of the study concluded that the most serious obstacle to network development and planning was the lack of any specific group to carry such activities forward.

As an outgrowth of The Computer Company's findings, delegates to the Governor's Conference adopted Resolution 20 which provided the State Library with a clear mandate to "immediately take the initiative to establish a statewide committee to define and implement resource sharing for the avoidance of duplication and the establishment of library cooperation including networking."

In August 1980, the State Library hosted a meeting of public and academic librarians in the state who had online bibliographic systems or who had issued RFPs for acquisition of such systems. Random growth of online systems in the state was of concern because of the need for long-range network planning. The existence of variations in detail and adherence to standards for bibliographic records, as well as lack of agreement on communications formats, were identified as factors which could prevent these libraries from sharing their databases online, an important step in development of any future statewide library network. The group recognized the need for development of interfaces between the various in-house and vendor systems which were implemented in the state.

In 1981, the Virginia General Assembly in House Joint Resolution 239 created a Commission on a State Library Networking System. The Commission was requested to study the feasibility and desirability of a state library networking system. The Commission, chaired by Delegate Ball of Henrico County, was specifically charged with investigating the following topics from the viewpoint of potential "network districts" (regions): interlibrary loan centers, including potential reimbursement for lenders of materials; union catalogs of books, periodicals and other library materials; cooperative staff development; cooperative collection development, including potential cooperative buying systems and centralized acquisitions processing; administration of network membership; and interregional cooperation. The Commission was charged with recommending to the 1982 Session of the General Assembly any legislation it deemed necessary. As part of its information gathering, this Legislative Study Commission held regional hearings throughout the Commonwealth.

State Library staff prepared brief papers on the specific topics outlined for review in the resolution and provided additional background information on the following topics: benefits which may be realized from library networking; potential network structures and suggestions for a distributed network in Virginia linking databases of automated libraries; the role of bibliographic utilities in library networking; economic considerations of networking; delivery systems; and reference and referral centers.

At the Commission's request, issue papers were prepared in the Spring of 1982 on the topics of network governance, network design, and network funding to provide additional background information and to generate discussion. These papers included a proposed bill to establish the Virginia library network, proposed guidelines for network participation, details on systems capabilities recommended for a Virginia network, and a proposed distributed network configuration for Virginia with nodes in five geographic regions in the state. The issue paper on funding reviewed funding formulae in other states, presented a rationale for state funding of the network based on identification of objectives on which a formula should be based, and presented projected costs for retrospective conversion of library catalogs and network operations through 1992.

As a result of the work of the Commission on a State Library Networking System, House Bill 430 was enacted by the General Assembly in 1983 to amend the Code of Virginia concerning the networking of all public, academic, special and school libraries. Provisions of the bill empowered the State Library Board to use funds appropriated for networking to assist libraries in preparing for networking and in supporting a library network.

The legislation stated that libraries receiving these monies were to be committed to networking standards and priorities established by the Board. All computer programs and databases created by grants made for networking were declared to be the property of the Commonwealth and were to be made available to all libraries of the network equally. This legislation created the State Networking Users Advisory Council (SNUAC) to "advise the State Librarian and the Board in the development and direction of the network and its policies, standards, funding levels and requirements for use, after receiving the input of other libraries." Membership in the seven-member board is by appointment of the Governor and is to represent all classes of networking users in the statewide library community.

Another networking initiative in 1983 was the Virginia State Library's submission of a proposal for a statewide academic library network in support of the Governor's Economic Development Project. An online library network linking the vast databases of research materials of the 15 state-supported academic institutions was proposed as a means for attracting high technology industries to the state. This network of academic libraries was to be a resource for use by other libraries in the state, as well as to provide a first-step in development of a statewide network. Funding was not obtained for this proposal.

The Virginia Plan for Academic Library Cooperation, originally issued in 1977, was revised in 1983 by the LAC/CHE. As a result of technological and cooperative developments in the intervening years, retrospective conversion of the holdings of all libraries in the state had become feasible. In addition to needs stated in 1977, the Plan identified that agreement would be needed on appropriate levels of service delivery and technical links between existing local, state, regional and national online systems before the full potential of cooperative efforts could be realized. The document contained a number of specific recommendations for immediate action: completion of retrospective conversion of the holdings of all academic libraries, development of a statewide collection development policy for academic libraries which will recognize each institution's need for adequate local resources, initiation of an online Virginia union list of serials, and development of a statewide interlibrary loan policy for all academic libraries which will consider load balancing, costs and document delivery. The Plan also recommended that the need for a central storage facility, originally recommended in 1977, should be reexamined in the context of recent technical advances, and that periodic independent review and evaluation of automated library systems in the state and the linkages between them was required to ensure efficient and effective use of current and future networking technologies. The revised document was provided to the SNUAC as a record of general interests, concerns and recommendations on academic library cooperation.

After meeting monthly for almost a year, the SNUAC issued its Principles and Goals for a Virginia Library Network in January 1984. Two related goals were identified as paramount for the creation of a successful library network in the state which would benefit all citizens of Virginia: providing both physical access and bibliographic access to all library holdings within the Commonwealth since local resources can never satisfy all information needs. Other goals related to networking were the need for flexibility in order to accommodate rapidly changing technologies in library automation and telecommunications, use of existing bibliographic standards and protocols, and the need to build upon currently existing systems. Use of standard protocols and existing resources were recognized as facilitating the incremental development of upgradable, compatible systems. The document recommended that the level of networking participation should be selected by the governing body of each participating institution. Minimum participation could provide access to databases to determine location information for desired materials. Higher levels of participation could include the abilities to determine availability of desired materials and to place online requests for those materials. Use of network delivery vans was identified as another potential service option which users could select. Successful networks in other states and expressions of belief in the potential of a state network led the SNUAC to conclude that the time had arrived for development of a library network in Virginia. The SNUAC recommended that a consultant be hired to study existing automated systems in academic libraries in Virginia and to identify models for statewide networks that might be appropriate for Virginia academic library participation.

The broader scope of this current study includes automation and networking of all types of libraries in the Commonwealth of Virginia. The study, coordinated by the Virginia State Library, the SNUAC and representatives of Virginia libraries, is the next step in Virginia's progress towards potential development of a statewide library network.

2.2 Library Networking Projects in Virginia

Libraries in Virginia have enjoyed a long and varied history of cooperative ventures among each other and with libraries outside the state. Some of these cooperative efforts have been initiated under the leadership of the Virginia State Library, while others have relied upon the initiative and enthusiasm of individual librarians around the state in response to their own needs. As a result, most of the library networking projects in Virginia are developing on an informal basis. While interlibrary cooperation can be viewed as a positive activity, when developed on an informal, local/regional basis it benefits only those direct participants. When these localized activities begin to be somewhat more structured, for example, by adopting automated systems, the local nature of the project becomes more acute unless great care is taken to coordinate various local developments statewide and to ensure compatibility (note: not uniformity) across the state.

Funding and guidance for various library networking projects in the state maybe obtained from three primary sources: the State Library, the Library Advisory Committee of the Council of Higher Education in Virginia (LAC/CHE), and the School Libraries and Information Technology/ Textbook Adoption Services of the Department of Education. Other funding may be available at the local level or from foundations (e.g., the Kellogg Foundation) and library organizations (e.g., the Council on Library Resources).

2.2.1 The Virginia Database and CAVALIR

The most formalized library networking project in the state is the expansion and maintenance of the Virginia database of cataloging records. This machine-readable bibliographic database currently contains over 2 million unique titles. A truly cooperative venture coordinated by the State Library, the database is based on input from 95 contributing libraries of different types (50% academic, 47.2% public, 2.4% special and 0.4% school libraries). Access to the database is provided by The Computer Company located in Richmond. Contributing libraries can use the database in a variety of ways. Fifty-seven libraries currently perform their cataloging on OCLC, and the State Library purchases their archive tapes for loading into the database.

One particular feature which can be seen as an expression of the intent of the Virginia State Library to actively promote library networking and resource sharing in Virginia is that the state database is not used merely as a passive finding tool. It is available to libraries in Virginia for retrospective conversion, ongoing cataloging, and as a locator tool. The data also can be used as a subject index to collections statewide. Virginia is the first state to offer this variety of services from a state database located within the state. Libraries can perform their cataloging (both ongoing and retrospective) online or in batch mode, and libraries that have previously automated, but have not adopted the MARC format, have been able to use the state database to upgrade their own databases to conform to national standards. Those libraries that perform their cataloging online to the Virginia database have an online shelflist; a tape of this data can be produced to load a library's holdings information into an automated circulation system.

A computer output product of the Virginia database is the microfiche union catalog, CAVALIR (Catalog of Virginia Library Resources) which is produced in full annually with two supplements per year. The catalog contains the holdings (by author, title and subject) of the libraries contributing to the Virginia database, complete with holdings symbols. The annual cumulation (currently comprising 3,492 fiche) and two supplements (1,096 and 1,425 fiche, respectively) are distributed to a total of 271 libraries including all participating libraries, all public and academic libraries, and to selected institutional and special libraries. When each new annual edition of CAVALIR is distributed, recipients are encouraged to give the superseded edition to school libraries.

2.2.2 The Richmond Area Multitype Library Network

Another State Library networking initiative was development of a pilot project for a shared automated library system. In 1983, the Virginia State Library (VSL) installed the Virginia Tech Library System (VTLS) to support the internal operations of the library. The automated library system currently supports cataloging, catalog maintenance, circulation, an online public access catalog and various administrative functions. Commercial software packages (e.g., VisiCalc) are used on the Hewlett Packard 3000/48 which supports VTLS, in order to provide additional administrative support and to develop an online system for booking and scheduling films. The State Library and other VTLS users are urging VTLS staff to complete development of the serials check-in and acquisitions subsystems in the near future. OCLC/SOLINET supports interlibrary loan activities at VSL and provides cataloging data which are downloaded into the VTLS system.

In 1984, the Pamunkey Regional Library became a network user of the State Library's VTLS system. In 1985, the network became a multitype library network with the addition of the J. Sargeant Reynolds Community College (JSR) as a network user. Each library has its own database and individual files on the system. The database of each of the libraries is available for searching by the other network users, and bibliographic records from the other users' files may be claimed/copied and then modified in one's own database. VSL and Pamunkey also can search the circulation status of materials in each other's database, but system security provisions do not allow access to the other library's patron records. J. Sargeant Reynolds expects to implement the circulation function during the Fall of 1985. None of the three libraries use the system to initiate circulation/ILL transactions for materials owned by another library in the network; all such transactions are requested in person, by phone or using the ALA ILL form.

Neither of the two libraries using the VSL's VTLS system expects to utilize the public access catalog (PAC) capability of VTLS because of the expense of the additional hardware and communications lines which would be required; however, both of these libraries have online catalogs in VTLS for use by library staff. JSR would like to have the PAC capability, but its use of PACs would require acquisition of additional ports at VSL. The main advantage of the networking arrangement with VSL is that both of the smaller libraries can obtain automation support on an integrated library system for a comparatively low set-up cost (approximately $40,000-$45,000). They receive free technical support from the systems management staff at VSL. The two network users assume ongoing costs associated with terminals, modems, telephone lines, and VTLS maintenance fees; federal funds supported retrospective conversion and the set-up costs. VSL assumes all costs associated with operation, maintenance, and upgrades to the Hewlett Packard minicomputer. Telecommunications pose problems for the two network users in terms of the high costs of telephone lines, slow speed of transmission, and line noise. Pamunkey is planning to lease telephone lines and use multiplexors to eliminate line noise, which was interfering with automated check-out operations, and to reduce ongoing costs.

Much original cataloging is performed at Pamunkey since only about five percent of its collection overlaps materials collected by VSL and J. Sargeant Reynolds. The cataloging data are entered online into VTLS. The Computer Company (TCC) uses tapes of Pamunkey's holdings produced by VSL to update CAVALIR and to provide Pamunkey with an annual microfiche catalog and quarterly supplements.

J. Sargeant Reynolds is a very recent addition to the network; it is loading the last five percent of its bibliographic records into VTLS using data tapes from online input to TCC's master file. These procedures update the Virginia database and result in the production of a tape for monthly input into VTLS at VSL. During this present transition period, JSR is operating three online systems: an in-house system operating on an IBM mainframe which provides brief records in print and microfiche formats which have served as a union catalog for the three campuses; online access to TCC's LC MARC-Virginia database file to obtain cataloging data and/or create cataloging records for newly received items and for records which remain to be converted; and online access to VTLS to provide an online union catalog of JSR holdings which have been converted and to access the cataloging data and circulation status of materials at VSL and Pamunkey Regional Library. The in-house system is expected to be dropped sometime during the next year. JSR would like to have a mechanism developed for online downloading of records from TCC's LC MARC-Virginia database file into the JSR database on VTLS.

Review of the procedures at JSR and Pamunkey indicates that a large degree of flexibility exists in how these two libraries make use of the shared automated system. No analyses were performed to determine the costs associated with either mode of operation/interaction.

2.2.3 The Lynchburg Area Library Cooperative

Another multitype library network project is the Lynchburg Area Library Cooperative which consists of fourteen libraries (six academic, one institutional, four public and three special libraries). The cooperating libraries have developed the Lynchburg Area Union List of Serials which is available as a printed listing produced from a machine-readable database on the computer at Randolph-Macon Women's College. A local document delivery system supports resource sharing among the member libraries. Five of the member libraries are seeking funding to support electronic mail and telefacsimile systems. Four libraries are considering a shared circulation system, so that they can access the status of materials availability in each of the collections. Members of the Cooperative are working on a staff development program and on a listing of member librarians who have reference expertise in specific subject areas. They expect that opportunities for cooperative collection development will evolve from their activities as a cooperating group of libraries.

2.2.4 Networking in Northern Virginia

Several cooperative library programs exist in the Northern Virginia region, some of which link libraries in this region with libraries in the District of Columbia and the Maryland suburbs. The Library Networking Committee of the Consortium for Continuing Education in Northern Virginia is a multitype library network composed of academic and public libraries. All participating libraries agree to provide free library service to all college students who attend colleges and universities in Northern Virginia.

The group also sponsors programs for continuing education and training of library professionals and staff. A request was made for grant funding for development of a computerized list of community resources, but funding could not be obtained.

The Library Council of the Metropolitan Council of Governments (COG) is a consortium which provides excellent opportunities for continuing education to all types of libraries in the Washington, D.C. area. Participants in COG include academic, public, school, special and federal libraries. Member libraries receive discounted rates on all workshops and seminars. Free reciprocal borrowing privileges are granted to residents of counties who hold a library card issued by one of the COG member public libraries. COG annually publishes a union list of the serial holdings of its public library members. Some members of COG participate in COG's Suburban Washington Film Cooperative which provides for materials booking and scheduling by telephone. COG also sponsors the COG Library Express Delivery Service which delivers messages, films, returned books, interlibrary loan requests, displays and giveaways to member libraries. Other services of COG include a newsletter, jobline and master calendar of library meetings in the area.

Libraries of any type which are members of OCLC/CAPCON may participate in informal reciprocal borrowing which is arranged through personal contact. Another multitype network exists between Fairfax County Public Library, George Mason University and the MITRE Corporation; resource sharing is initiated by telephone and by patron hand-carried referral forms.

Several cooperative efforts between public libraries and school systems are underway in Northern Virginia. For the past ten years the Arlington County Department of Libraries has operated a branch library in a public school career and special class center. This public library is open seven days per week and occupies a two-story section of the school building which has an outside entrance. The school system provides some monies to support the public library, and library staff work closely with the teachers in order to better support the instructional program of the school. In another cooperative program, Federal monies have been obtained to place terminals in the three high schools in Arlington County so that the public library's collection may be searched online. The school collections will be converted by school staff and will be entered online into the public library's NOTIS system. The professional collection in the school system's education center will be input first; the public may use this collection, but few residents are aware of its resources. This common access in a single online catalog to public and school library holdings is probably the first effort of this kind in the state. Various cooperative programs exist between the public and school libraries in the City of Alexandria.

2.2.5 Networking in the Tidewater Area

One LAC/CHE sponsored project is a cooperative serials project among Tidewater area libraries. This project is known as the Joint Tidewater Library Service Project and currently involves 15 academic libraries; the second phase of the project includes plans to add the serials holdings of four major public libraries in the region. Seven of the academic libraries have converted their records using the OCLC/SOLINET union list facility; the non-OCLC libraries prepared work forms for their serials which were input to OCLC by Old Dominion University (ODU) library staff. The local data records in the online union list now provide holdings information for approximately 9,000 unique titles. This group of Virginia libraries became the first fully functioning OCLC Union List Group in the Southeast. In December 1984, the Tidewater Consortium Union List of Serials was issued; four of the libraries also have purchased individual catalogs of their holdings. At present, online access to these union list data is limited to those libraries who participate in the OCLC Interlibrary Loan Subsystem. The potential exists for these holdings records to be loaded into the Virginia database via OCLC archive tapes and, therefore, to be available to all libraries in the state either online, as part of an up-to-date Virginia union list of serials, or integrated in CAVALIR. Other cooperative efforts of the Tidewater Consortium for Higher Education include reciprocal borrowing privileges, reference resource sharing via referrals, and document delivery by a courier service that has been in operation since 1976.

The public libraries in the Tidewater region currently benefit from having access to the serials union list data of the fifteen academic libraries in the area, as well as having a number of cooperative programs for public libraries sponsored by the Tidewater Area Library Directors Council (TALDC). Regular and special meetings of TALDC provide administrative networking, information exchange, continuing education, and opportunity for planning and development of cooperative projects for resource sharing and interlibrary loan support. For a number of years the Hampton Public Library has prepared a union list of serials representing holdings of the public and smaller academic libraries in the area; this publication was revised every 5-6 years and was last updated around 1982. Some of the public libraries provide copies of their individual fiche catalogs to local academic, public and school libraries in order to enable patrons to find needed materials from other local libraries. In the Tidewater area, all libraries are within a 15-20 mile radius of ODU, so much of the resource sharing which exists in the area is not evident from interlibrary loan statistics. In the past, the TALDC libraries established a grant-funded project for joint access to the New York Times database. Telecopiers were purchased as part of this project in order to facilitate transmission of requests/responses between participating libraries and the centralized search site. Demand for use of this information service did not justify its continuation. Some of the libraries in the area continue to use the telecopiers for transmission of interlibrary communications and requested copies of journal articles.

2.2.6 Other Multitype Library Networks in Virginia

A number of other multitype cooperative programs exist in the state; these programs are outlined below:

- The Richmond Area Film/Video Cooperative supports resource sharing of audiovisuals among academic, public and special libraries in the Richmond area.

- The Richmond Online Users Group is a very active group of online system users from all types of libraries in the Richmond area. Vendors are invited to speak to the group. The group is a useful source of information for librarians considering the acquisition of online systems.

- Richmond City, Henrico County and Chesterfield County public libraries and school libraries are jointly operating a program to motivate reading.

- Henrico County high schools and public libraries have begun a cooperative project in which the public library system has supplied the high school libraries with copies of its microfiche catalog; the high schools are converting their holdings with TCC for input into CAVALIR.

- The Roanoke Valley Library Association is a cooperative of 14 academic, public and special libraries.

- The Pulaski County Library supplied personnel to keep selected school libraries open during the summer.

- The Pulaski County Library, the school libraries, and the local community college applied for LSCA Title III funds to install an electronic mail facility to support interlibrary loan and reference among the three types of institutions.

- The Longwood College librarian has formed a coalition with all of the high school librarians and some of the elementary school librarians in several of the southside counties. The group holds meetings and has obtained funding from a local TV station to provide videotape and videodisk equipment to prepare programs to teach library skills to students. Future plans include providing high school libraries with online access to Longwood's catalog.

- Community colleges throughout the state provide library service to the public as well as to their students. School librarians often suggest the local community college as a backup for school and public library collections. In a few communities where public library service may be inadequate or non-existent, community college libraries may purchase some fiction and other public library type materials and provide library service to the community-at-large.

- Special libraries at academic institutions (e.g., law school libraries, nursing and medical school libraries) often develop formal and/or informal arrangements with special libraries in their local areas, as well as throughout the state. For example, the Richmond Area Law Librarians' Association is an informal network of approximately 50 librarians from law schools and law firms. Monthly meetings are held with invited speakers. The group has discussed the publication of a union list of serials, but the proposed project was shelved due to lack of time for manual processing of records. Another example of cooperation between academic and special law librarians is the informal support given to law libraries throughout the state by the library at the T.C. Williams School of Law at the University of Richmond. This library operates a call-in photocopy service for law libraries in the state and charges 10 cents per page with no service charge. The requested material is mailed out with a bill.

- Choices in Automation is a recently formed group of librarians concerned with automation. The purpose of the group is to provide a forum for discussion of common problems, to provide support and educational information on library automation, and to act as a liaison group with various vendors. The group plans to sponsor regular programs to address specific problems with automating library functions and services; also, solutions to specific problems will be shared. This group is now in the process of writing by-laws and becoming a formal non-profit organization.

- The Department of Education Film Distribution Service, centered in Richmond, provides distribution of audiovisuals to public and private schools, to universities and colleges with teacher education programs, and to student organizations. The state purchases the films and maintains the central office. Branches of the distribution service are located at UVA and at Radford and Longwood Colleges; these institutions pay for local office space and personnel. Public schools pay a lower fee for use of materials than private schools pay; this service to private schools was initiated recently. Orders are submitted by phone and documentation must be forwarded to confirm the orders.

- The Virginia State Library operates a film service to loan films to public, academic, institutional, and special libraries throughout the state. Plans are underway for the development of an online database of bibliographic records for these 4,000 films. A catalog of films will be produced from the database. A recently-purchased software package will provide future online dial-up access to place orders for films; it will also support circulation of the films and materials scheduling capabilities.

2.2.7 Networking in Virginia by Single Type of Library

There are a number of cooperative programs in the state which have been initiated between/among libraries of a single type. The following list provides a brief description of some of these programs:

- The Virginia Polytechnic Institute and State University (VPI) - University of Virginia (UVA) serials conversion project was planned in 1979 to provide serials records for inclusion in the Virginia database. This project was originally sponsored by LAC/CHE with Title II-C grant funds; the costs for continued ongoing conversion activities currently are assumed by the respective libraries. Records are converted using OCLC and transferred directly to VPI's VTLS system in which VPI and UVA have separate databases. Records may be claimed from either library's database and updated.

As of June 1985, VPI had 12,000 serials titles converted to full MARC format; approximately 37,000 cataloged serial titles in that collection have not yet been converted to MARC format. UVA had converted a smaller number (2,000) since that library does not have a full-time special staff unit for retrospective conversion of serials. To date these 14,000 serial titles have not been added to the Virginia database, since the database does not yet accommodate the LC MARC II serials format for detailed holdings statements. However, potential exists for future inclusion of these serials records in the statewide database.

- The Private College Library Directors Group was organized in 1983 as a result of concern over specific wording in the proposed networking legislation. Through their discussions with the State Librarian and the Library Coordinator of the Council of Higher Education, the wording was changed. The group serves as a forum for information and idea exchange and provides opportunities for cooperative activities to be proposed. The participating libraries recently completed a factual and attitudinal questionnaire on integrated library systems.

- The Richmond Academic Library Cooperative (RALC), established in 1974, serves the libraries at seven area institutions: Randolph-Macon College, Union Theological Seminary, the University of Richmond, Virginia Commonwealth University and its medical school, the Virginia State Library, Virginia State University, and Virginia Union University. These libraries share a shuttle service to deliver films and interlibrary loan materials. The group has developed carefully-worked-out inter-institutional agreements for interlibrary loan, borrowing, etc. There are a variety of committees and workshops set up by the group, as well as a newsletter. An on-going committee is working on cooperative collection development, and a cooperative preservation program was started recently.

- The Richmond Area Library Directors' group is a cooperating group of 11 public library directors. Meetings of the group provide opportunities for information exchange and for development of cooperative projects.

- The Richmond Theological Center is a cooperative supported by a contractual arrangement through which the Union Theological Seminary Library shares its resources with the Presbyterian School of Christian Education and the Virginia Union University School of Theology.

- Several academic libraries in the Harrisonburg area provide library service to faculty from any of the four cooperating institutions: James Madison University, Eastern Mennonite College and Seminary, Bridgewater College, and Blue Ridge Community College. Future plans include the possibility of extending service to students at the four institutions. This cooperating group may also become a multitype cooperative by developing joint programs with local public libraries.

- Another academic cooperative group in the same area is the Shenandoah Valley Independent Colleges Library Cooperative composed of Bridgewater College, Mary Baldwin College, and Eastern Mennonite College and Seminary.

- Small Public Libraries in Transition (SPLIT) provides opportunities for public librarians to share experiences and seek solutions to common problems.

- The Henrico County and Richmond City school divisions are proposing development of a shared database of non-print materials.

- School libraries in the Hampton and Newport News divisions are currently sharing supervisory services and in-service training programs.

2.3 Library Networking Trends

A review of both recent and classic publications on library networking shows that current trends in networking are towards decentralization and maximum local autonomy. With the current availability of sophisticated multifunction automated library systems which are mini- and microcomputer-based, total online processing comes within the budget range of most libraries. For small libraries, shared systems provide a cost-effective means of gaining automation support for library processing and service functions. As more libraries convert their records into machine-readable form and search them online through public access catalogs, linkages between nearby systems become cost-effective, both in terms of telecommunications costs and document delivery costs and time.

At the national level there are a number of initiatives towards linking systems. The Council on Library Resources and the Library of Congress have initiated programs, such as the Linked Systems Project, to link and coordinate the OCLC, RLG, WLN, and Library of Congress systems with the Open Systems Interface (OSI). Canada is planning development of a decentralized national library and information network by connecting the online catalogs of provincial and regional libraries to form an online national union catalog.

A number of states have developed or are planning the development of computer-based statewide library networks. These activities are discussed in detail in Section 6 and Appendix A of this report.

In the near future, the national level bibliographic utilities will continue to play an important role in providing cataloging data and interlibrary loan support, particularly for large research libraries. However, as more statewide library networks are developed, the large bibliographic utilities that exist today may become switching mechanisms, rather than continue as full record databases.

During the last decade, networking has resulted in the most dramatic changes in the relationships among libraries. Yet there has been some degree of conflict between networking proponents and skeptics. Proponents claim that networking:

- maximizes the effective use of library resources;
- offers opportunities to improve response to users' demands and to provide new services;
- may provide improved efficiency in library operations;
- introduces economies of scale to libraries;
- increases communication, idea-sharing, and distribution of expertise and experience among libraries;
- encourages library management to apply systems thinking, systems analysis, and systems techniques to all library operations;
- may lead to improved management of both library operations and library resources.

Networking skeptics claim that:

- networking may add new administrative levels with no change in those which existed previously;
- networking may not provide greater cost effectiveness in library operations;

- network governing bodies may not give adequate consideration to the different needs and requirements that various types of libraries have;

- networking often does not include school libraries, which as a group need the support of other collections to serve the needs of faculty and gifted students, in particular, but which also have significant resources to share (e.g., audiovisual materials, special ethnic collections, career education materials, professional collections, and materials for instruction of the functionally illiterate, learning disabled, and of those with special educational needs);

- there is general lack of agreement on how to measure network effectiveness.

In order for any potential networking effort to be successful in Virginia, two major issues must be considered: (1) all issues raised by network skeptics must be carefully addressed in network planning so that these problems may be circumvented, and (2) there must be a concerted effort to advertise the benefits and cost-effectiveness of any planned network services, since the attitudes of librarians toward networking can have a significant impact on network development and success.

SECTION 3
STUDY METHODS

3.1 Introduction

Phase I of this study of library automation and networking in the Commonwealth of Virginia required a review of the current status of such activities in the state. Much of the information describing the current situation was not available in written form. Another task in Phase I was the requirement to determine whether a more formal networking configuration is needed and should be pursued in Virginia. This task required both analysis of factual data on the current library environment in Virginia, as well as the gathering of opinions and attitudes on this subject from members of the library community throughout the state.

Several information gathering techniques were used to obtain the required information:

- review of background documentation on libraries and networking in Virginia;
- a survey of all types of libraries in the state;
- a telephone survey of state library agencies to identify current statewide networking activities in other states;
- site visits to selected libraries and meetings/interviews with designated members of the library community and with representatives of related professional, state, research, and commercial organizations;
- public hearings in various geographic regions of Virginia.

The establishment of a Project Advisory Committee composed of representatives from appropriate state government organizations and from all types of libraries was proposed, both to provide guidance during the course of the study and to represent, in general, the library community in the state.

3.2 Project Advisory Committee

The members of this Committee were selected by the Virginia State Library (VSL) and the State Networking Users Advisory Board (SNUAB)*, the co-sponsors of this current study. Members of the Project Advisory Committee represent the VSL, SNAUB, the Library Advisory Committee of the Council of Higher Education in Virginia (LAC/CHE), the Virginia Department of Education, and academic, public, school, and special libraries from all regions of the state. The Committee is composed of the following 17 members:

- Virginia State Library (VSL)
    - Donald Haynes, State Librarian
    - William Hubbard, Director of Library Services
    - Amy Pesak, Automation Consultant
- State Networking Users Advisory Board (SNUAB)
    - Patricia Thomas, Chair, Tidewater Community College
    - Vonita Dandridge, Virginia Electric Power Company
    - Lynn Dodge, Lynchburg Public Library
    - James Gaines, Virginia Military Institute
    - Elizabeth Green, Hampton City Schools
    - Paul Metz, Virginia Polytechnic Institute and State University
    - John Trotti, Union Theological Seminary

---

* The originally-established State Networking Users Advisory Council (SNUAC) was made an advisory board through legislative action which became effective on July 1, 1985.

- Council of Higher Education in Virginia (LAC/CHE)

  John Molnar, Library Coordinator

- Department of Education

  Gloria Barber, Supervisor of School Libraries and Information Technology

- Virginia Public Library Representatives

  Edwin S. Clay, III, Fairfax County Public Library

  Jill Jessee, Washington County Public Library

  Martha Sims, Virginia Beach Department of Public Libraries

  William Swinson, Jefferson-Madison Regional Library

- Virginia Special Library Representative

  Marion George, United Virginia Bankshares, Inc.

Meetings with the Committee have provided valuable input to this study. The group reviews and suggests modifications to all major documents associated with this project.

3.3 Review of Background Documentation

The review of background documents on libraries and networking in Virginia provided important information on various developments in library cooperation across the state. It also provided a perspective on state government activities, interests, and decisions which will continue to have impact on networking developments in the Commonwealth. The following documents, listed in order of publication, were formally reviewed during Phase I of the study:

- Council of Higher Education in Virginia, Library Advisory Committee. Virginia Plan for Academic Library Cooperation. Richmond, 1977; revised 1983.

- Fullerton, Richard F., et al. Tidewater Library Network Study, Final Report. Allison Park, PA; Alexandria, VA, Synectics Corporation, 1978.
- The Computer Company. Integrated Library Network System for the Commonwealth of Virginia. Richmond, [1978].
- Virginia State Library. Library Automation in Virginia, Proceedings of the Meeting of the Statewide Discussion Group. Richmond, 1980.
- Virginia. General Assembly. House of Delegates. House Joint Resolution No. 239. Richmond, 1981.
- Virginia State Library. An Overview of Library Networking in Virginia. Richmond, 1981.
- Virginia State Library. An Overview of Library Networking in Virginia, 1981-82 Supplement. Richmond, 1982; revised 1985.
- Johnson, Richardia S., Vinod Chachra, Dean Burgess. Issue Papers Prepared for the Commission Studying a State Library Networking System. Richmond, 1982.
- Information Systems Consultants, Inc. State and Commercial Bibliographic Activities and Their Effect on the Bibliographic Utilities. 1983.
- Virginia. General Assembly. House of Delegates. House Bill No. 430. Richmond, 1983.
- Virginia State Library. Governor's Economic Development Project-Proposal for a Statewide Library Network. Richmond, [1983].
- Virginia State Library. Statistics of Virginia Public Libraries and Institutional Libraries, 1982-83. Richmond, 1984.
- State Networking Users Advisory Council. Principles and Goals for a Virginia Library Network. Richmond, March 1984.
- Council of Higher Education in Virginia, Library Advisory Committee. "Recommendations for Consultant." Richmond, March 1984.

In addition to the formal review of documents we conducted a general literature review on the topics of library automation and networking activities. A review of this more general literature served to provide us with an up-to-date picture of the current levels of automation and networking activities, as well as the state-of-the-art of related systems and services.

3.4 Survey of Libraries in Virginia

One of the principal inputs to this study and report is a survey of Virginia libraries. A total of 479 libraries and library administrative units were identified and formed the survey population. Academic institutions were considered to represent single library administrative units, except in a few instances where some/each of the respective institution's libraries were designated as separate administrative units. Each school division was asked to respond for all school libraries and special collections which it administered, and all public library headquarters were asked to include data for all their branch and special collections.

A survey instrument (see Appendix C) was designed to collect data on library resources and activities, library cooperation and networking, general automation, and details of automated systems. The questionnaire collected library statistics (e.g., titles and volumes held), opinions concerning the importance of networking functions or services, the benefits of current library automation, etc. Data on specific automation equipment and models were also gathered. The instrument was sent to all 479 libraries and a total of 329 libraries responded. Thus, the response rate was 69 percent.

A follow-up of non-respondents was conducted by telephone. Some indicated that they would complete the questionnaire, others indicated that they did not have enough time (in which case we asked if they would respond to a subset of questions, either over the telephone or by mail), and a few lost or did not receive the questionnaire (in which case another was sent to them, if they agreed to respond).

The data from the questionnaires were coded, edited and open-ended questions were classified by King Research survey staff. Data tabulations were produced by our Fortune microcomputer. Most of the data were tabulated and analyzed by three variables: type of library, size of library (in terms of number of volumes/items held) and region in which the libraries reside. The classification of library types that was used is:

- Public
- Institutional
- Academic (state supported, community college, private)
- School
- Special (state and local government, federal, and other).

The following sizes of libraries were defined:

- < 10,000 volumes/items
- 10,000 to 99,999 volumes/items
- 100,000 to 500,000 volumes/items
- > 500,000 volumes/items.

Some respondents did not identify their collection sizes (either in terms of titles or volumes/items). Libraries were also identified by the geographic region in which they reside as shown in Figure 1 on the following page. These geographic regions correspond to the geographic regions designated by the Virginia Library Association (VLA).

The outcome of our survey of Virginia libraries is presented in Sections 4 and 5 and in Appendix B of this report. The libraries that responded to the survey are listed in Appendix D. The data collected represent the library environment in Virginia as of June 1985.

3.5 Survey of State Library Agencies

In order to review other statewide library automation and networking activities and plans, a brief telephone survey of state library agencies was conducted. This survey was kept informal and covered topics including the types of activities in process, the extent of libraries' involvement, automation activities, funding, and governance. The outcome of this survey is presented in Section 6 and Appendix A of this report.

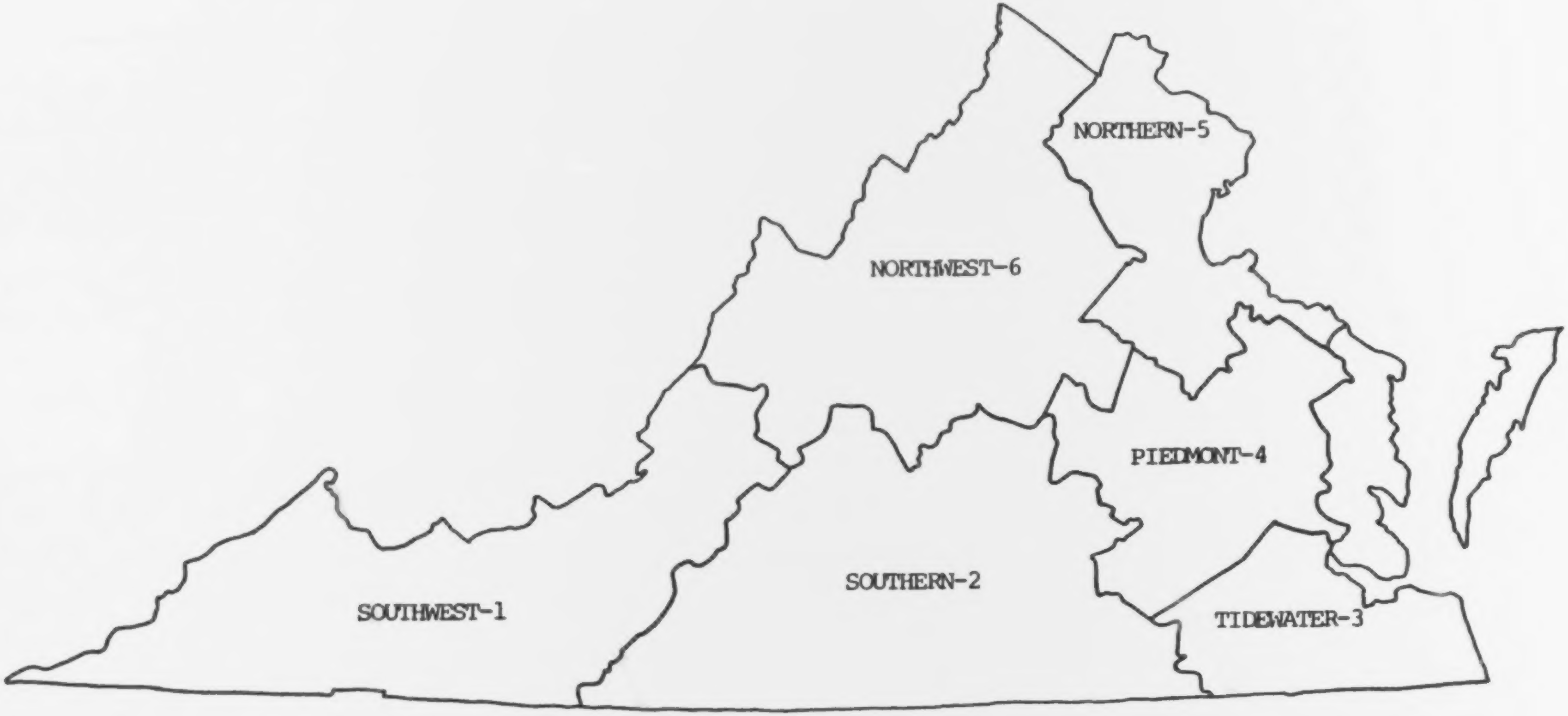

NORTHERN-5
NORTHWEST-6
PIEDMONT-4
SOUTHERN-2
SOUTHWEST-1
TIDEWATER-3

Figure 1. The Six Regions of Virginia

3.6 Site Visits, Interviews, and Meetings with Library Representatives

Informal meetings, interviews, and site visits were held with representatives of various libraries and professional library groups throughout the state. These personal contacts were made to solicit input and advice on various aspects of library automation and networking in Virginia and to supplement information gathered in the survey of Virginia libraries. The following were included in the meetings, interviews, and visits:

- State Librarian and assistants
- State Library Board, Subcommittee on Networking
- Council of Higher Education in Virginia, Library Advisory Committee
- State Department of Education, Supervisor of School Libraries and Textbook Adoption and the Supervisor of School Libraries and Information Technology
- Virginia Community College System, Deputy Chancellor
- Virginia Library Association, Executive Committee
- Virginia Library Association, Chair of the Public Library Section
- Virginia Special Libraries Association, Officers
- Virginia Educational Media Association, Executive Board
- Private College Library Directors Group
- Director of the CAVALIR Project
- Virginia Polytechnic Institute and State University, Vice President for Computing and Information Systems
- Virginia Department of Information Technology
- Center for Innovative Technology
- Xerox Corporation, International Center for Training and Management Development
- University of Virginia, University Librarian
- Virginia Polytechnic Institute and State University, Director of Libraries

- Old Dominion University, Dean of Library Services
- Blue Ridge Regional Library, Director
- Jefferson-Madison Regional Library, Director
- Tidewater Consortium for Higher Education, representatives
- Tidewater Area Library Directors Council
- Lynchburg Area Consortium, Coordinator
- Representatives from various consortia in Northern Virginia.

The particular needs and concerns identified during these meetings are discussed in Section 5 of this report.

3.7 Regional Hearings

The needs, priorities, and constraints of libraries in Virginia could be identified partially through the interviews and surveys. However, we had found it extremely useful to supplement interviews and surveys with regional hearings. Such hearings were advertised in advance and all librarians within a region were invited to attend. Four hearings were held in early August at the following locations:

- George Mason University (Northern Virginia);
- Norfolk Public Library (Tidewater Region);
- Virginia Polytechnic Institute and State University (Southwest Virginia);
- Jefferson-Madison Regional Library, Charlottesville (Northwest Virginia).

A brief analysis of representation at the four hearings is summarized below:

- Total attendance -- 171
- Academic libraries — 64 (37%)
    - Community colleges -- 9 (5%)
    - Other academic institutions — 55 (32%)

- Institutional libraries — 1 (< 1%)
- Public libraries — 65 (38%)
- School libraries — 13 (8%)
- Special libraries — 3 (2%)
- Virginia State Library — 16 (9%)
- Other (legislators, legislative aides, vendors' representatives) — 9 (5%)

Librarians attending the hearings were given a brief overview of the study and its objectives and were asked to discuss the needs, priorities, concerns, and plans relating to their own libraries. Involving librarians in this way serves a dual purpose. First, the project staff acquire a broader and more detailed view of the statewide situation, as well as local differences. Second, participating librarians have become involved in the planning process itself, which tends to facilitate the ultimate acceptance of plans that emerge.

SECTION 4

PRESENT LIBRARY ENVIRONMENT IN VIRGINIA

4.1 Introduction

In this section we present a statistical description of library activities throughout the Commonwealth of Virginia. First, we provide statistics by type of library on levels of funding and organizational structure; by size in terms of titles, volumes, and staff; and by geographic dispersion of the libraries throughout the state. Then we consider the number of patrons served and, finally, the resources provided by libraries throughout the state. Second, we present data on the extent of formal and/or informal cooperative and networking activities in the state and across state borders. Data are also presented on opinions regarding the relative importance of networking functions or services. Finally, we examine the extent to which library automation has been implemented (and is planned) throughout the state. The opinions of librarians concerning the benefits of automation in the libraries are also discussed.

4.2 Library Resources and Activities

The total number of libraries or library administrative units responding to the survey is 329, which represents 69 percent of the libraries in the state that were in the population of consideration (479). These libraries are broken down by type as shown in Table 1 on the following page. The number of libraries are fairly evenly divided between public, academic, school divisions and all other libraries.

The responding libraries fall into the size categories as shown in Table 2. These libraries are distributed among the six state regions as shown in Figure 2.

The number of libraries of each type obviously depends to some degree on the sources of funding for libraries. The number and proportion

TABLE 1

Survey Respondents, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES RESPONDING TO THE SURVEY, BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries Responding to Questionnaire	Proportion of All Libraries Responding to Questionnaire (%)
Public	79	24
Institutional	24	7
Academic		
State-Supported	19	6
Community College	21	6
Private University & College	25	8
Total	65	20
School Division	86	26
Special		
State & Local Government	9	3
Federal Government	18	6
Other	44	13
Total	71	22
Unknown	4	1
TOTAL	329	100

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329).

TABLE 2

Survey Respondents, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES RESPONDING TO THE SURVEY,
BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Number of Libraries Responding to Questionnaire	Proportion of All Libraries Responding to Questionnaire (%)
< 10,000	51	16
10,000 - 99,999	143	43
100,000 - 500,000	65	20
> 500,000	24	7
Unknown	46	14
TOTAL	329	100

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329).

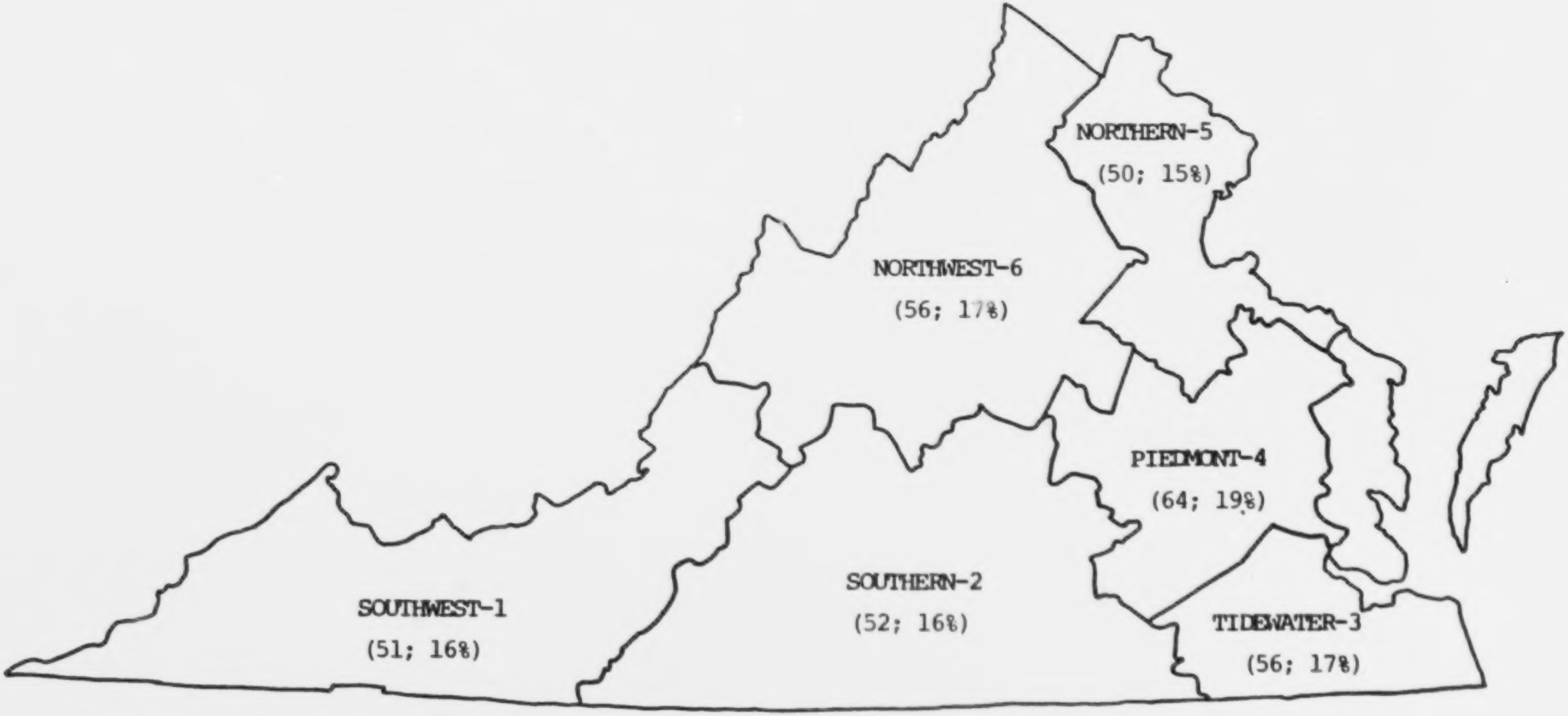

NORTHERN-5
(50; 15%)
NORTHWEST-6
(56; 17%)
PIEDMONT-4
(64; 19%)
SOUTHERN-2
(52; 16%)
SOUTHWEST-1
(51; 16%)
TIDEWATER-3
(56; 17%)

Figure 2 Number of Libraries in Each Region Responding to the Survey (proportion is of all libraries in each region responding to the survey), 1985

of each type of library that are primarily funded by four principal sources are:

- Federal funding - 39 libraries, 12%
- State funding - 78 libraries, 24%
- Local funding - 141 libraries, 43%
- Private funding - 70 libraries, 21%

Most of the public libraries are funded by local (90%) and state (8%) government, but two indicated that they were primarily funded by private sources. School district sources of funds vary: 12 percent federal, 12 percent state, 76 percent local, and one percent private. Federal funds are also used to support institutional libraries (25%), state-supported academic libraries (5%) and other special libraries (9%). Other than these incidences, the funding sources are what one would expect.

The organizational structures of libraries or library systems include a single library (55%), a main library with branch libraries (18%, averaging 3 branches each), and a group of libraries (26%). The latter is largely accounted for by the school divisions. The public libraries are split about evenly between single and main libraries with branches. Most of the other types of libraries are dominated (i.e., more than two-thirds) by single library organizational structures.

The responding libraries hold approximately 24 million titles and 70 million volumes. Nearly two-thirds of the titles are books and monographs, although less than one-half (42%) of the volumes are. Serial volumes account for more than twelve times the serial titles (244,000) because of multiple issues. The remaining volumes include microforms (12.2 million), government documents (4.5 million), and audiovisuals and films (2.3 million). The number of titles and volumes acquired during the last year was 1 million and 3 million, respectively. The books and monographs acquired accounted for 57 percent and 44 percent of titles and volumes, respectively. Public libraries and the three types of academic libraries account for most of the new titles and volumes. Public libraries account for 40 percent of the titles and 37 percent of the volumes. Academic libraries acquired 39 percent of the titles and 48 percent of the volumes.

It is interesting to note that about one-half of the libraries (45%) have collections and services available for use without restrictions. The lowest availability is in the Northern region (20%) with the rest of the regions ranging from 40 percent (Southwest) to 60 percent (Northwest). Low availability is found in state-supported special and academic libraries (11% and 42%, respectively), federal libraries (17%), and other special libraries (20%).

About 2.8 million patrons are registered in the responding libraries and an estimated additional 2.9 million patrons use libraries where patrons were not registered or where up-to-date registration statistics were not available. Public library users account for most of the registered and non-registered patrons (78% and 72%, respectively). The number of items checked-out by the responding libraries in the last year was 54.4 million, of which almost half (49%) were from public libraries, and a further 38 percent from school libraries.

4.3 Library Networking in Virginia

A high proportion of libraries (60%) engage in formal and/or informal cooperative networking activities with other libraries. Generally, academic libraries are somewhat more likely to be involved in networking than the other types of libraries (see Table 3). Otherwise, the types of libraries that are not heavily involved in networking are non-governmental special libraries (48%) and school libraries (40%).

The involvement of libraries in networking is dependent partially on their size as shown in Table 4. The larger the library, the more likely it is to engage in networking activities.

Only 43 percent of the smallest libraries (i.e., those with less than 10,000 volumes) belong to networks and the proportion increases steadily by size to the largest libraries, of which 92 percent belong. There is substantial discrepancy among regions of the state as to proportion of libraries belonging to networks (see Figure 3), with Region 2 (Southern) having the lowest proportion (49%) and the highest being Region 3 (Tidewater) in which 65 percent of the libraries belong to networks.

TABLE 3

Networking Activities, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES THAT CURRENTLY ENGAGE
IN ANY FORMAL AND/OR INFORMAL COOPERATIVE AND NETWORKING ACTIVITIES
WITH OTHER LIBRARIES, BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries	Proportion (%)
Public	53	67
Institutional	12	50
Academic		
State-Supported	18	95
Community College	17	81
Private University & College	20	80
School	34	40
Special		
State & Local Government	6	67
Federal Government	13	72
Other	21	48
Unknown	3	75
All	197	60

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 4

Networking Activities, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES THAT BELONG TO COOPERATIVES
OR LIBRARY NETWORKS, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Number of Libraries that Belong to Networks	Proportion of Libraries that Belong to Networks (%)
< 10,000	22	43
10,000 - 99,999	79	55
100,000 - 500,000	54	83
> 500,000	22	92
Unknown	20	43
All	197	60

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

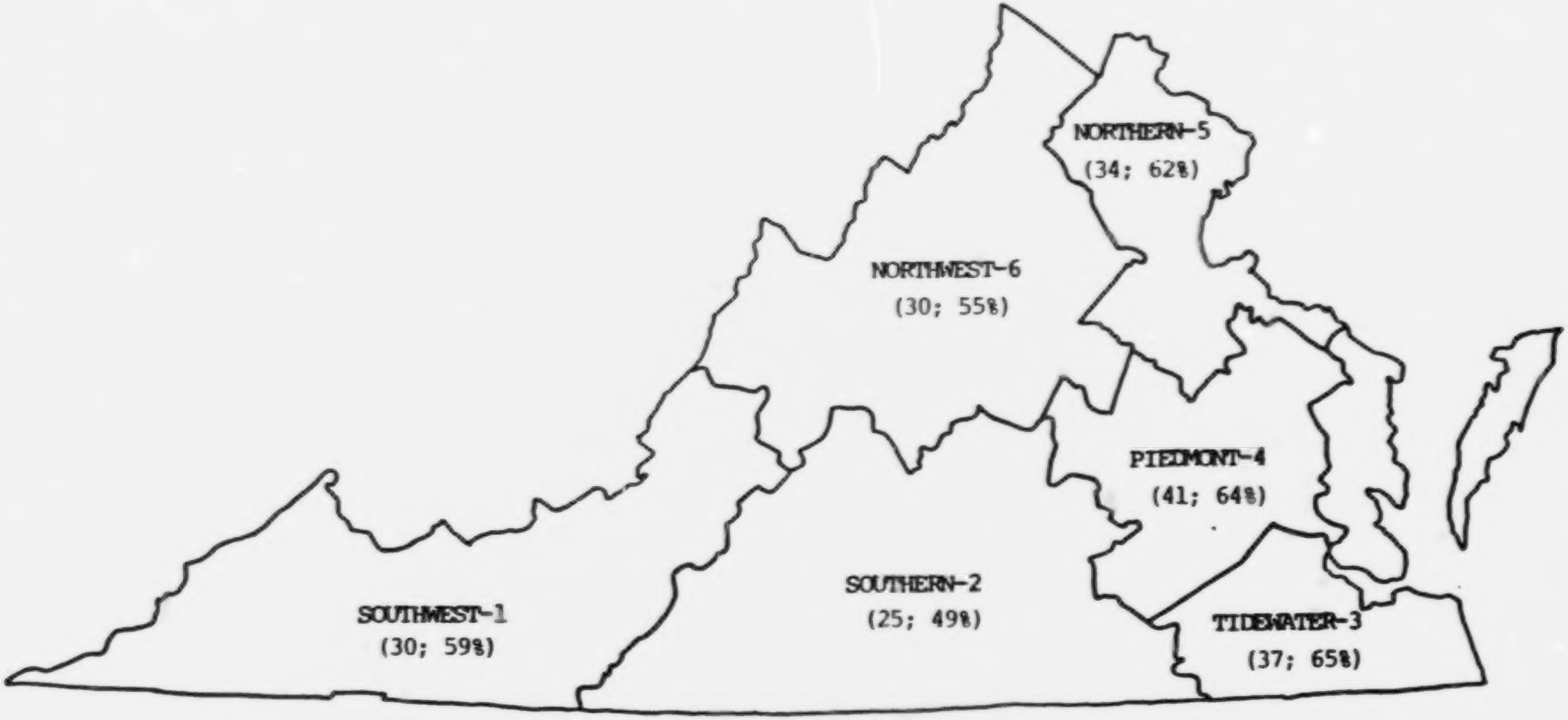

NORTHERN-5
(34; 62%)
NORTHWEST-6
(30; 55%)
PIEDMONT-4
(41; 64%)
SOUTHERN-2
(25; 49%)
SOUTHWEST-1
(30; 59%)
TIDEWATER-3
(37; 65%)

Figure 3 Number of Libraries in Each Region that Belong to Library Cooperatives or Networks in Virginia (proportion is of all libraries in each region responding to the survey), 1985

There are many reasons why the libraries belong to networks. The most frequently cited major benefits or advantages of their current participation are: access to greater resources (90%) and improved services to patrons (88%). Nearly one-half of the libraries indicated that increased communications among libraries is beneficial or advantageous as well. Fewer of the libraries felt that convenience (39%), cost savings (35%), labor savings (25%) or space savings (21%) are major benefits or advantages of networking activities. The pattern of opinions concerning the benefits and advantages of library networking is remarkably similar among the various types of libraries (see Table 5). Notable exceptions to this pattern are federal libraries, of which a higher proportion indicate the benefits of all categories than do the other types of libraries. Cost savings, space savings and labor savings in particular are more important to them in that the proportion indicating these factors is about double that of the other libraries. Yet, school divisions have the opposite view in two of the categories (10% vs. 35% for cost savings and 5% vs. 25% for labor savings). As far as size of libraries is concerned, space savings are more important for small libraries (41% vs. 21% all libraries) and less important for the largest ones (5% vs. 21%). To a lesser degree the same trend also holds for cost savings, but is the reverse for labor savings.

When asked whether any formal and/or informal cooperative and networking activities the libraries had participated in had been unsuccessful in any way, only 20 percent indicated such negative experiences. The majority of difficulties apparently had been encountered by academic (about 28% of those that participate) and public libraries (33% of those that participate). Regionally, both the Piedmont and Southwest region libraries indicated very little problem (6% and 8%), whereas, in the remainder of the regions, there were between 22 and 35 percent of the libraries that indicated some difficulties.

Opinions and attitudes of the libraries about the importance of a number of specific networking functions or services were solicited. The respondents were asked to indicate importance on a scale of one to five (with one = least important and five = most important). The most important service was considered to be interlibrary loan (4.3 average score). Four

TABLE 5

Perceived Benefits of Networking, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES THAT CONSIDER PARTICIPATION IN COOPERATIVE AND NETWORKING ACTIVITIES TO HAVE A VARIETY OF MAJOR BENEFITS OR ADVANTAGES, BY TYPE OF LIBRARY, 1985

	Major Benefits/Advantages															
	Access to Greater Resources		Improved Service To Patrons		Convenience		Cost Savings		Space Savings		Increased Communications Among Libraries		Labor Savings		Other	
Type of Library	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
Public	39	89	41	93	16	36	16	36	7	16	21	48	10	23	2	5
Institutional	11	92	10	83	4	33	5	42	3	25	5	42	1	8	1	8
Academic																
State-Supported	16	94	16	94	6	35	5	29	3	18	8	47	6	35	2	12
Community Colleges	15	88	16	94	9	53	6	35	4	24	8	47	4	24	1	6
Private University & Colleges	18	95	16	84	11	58	7	37	1	5	11	58	7	37	-	-
School	18	86	17	81	6	29	2	10	4	19	11	52	1	5	1	5
Special																
State & Local Government	5	100	5	100	2	40	2	40	1	20	4	80	2	40	-	-
Federal Government	11	100	10	91	7	64	9	82	5	45	6	55	5	45	-	-
Other	12	75	10	67	3	19	4	25	5	31	5	31	4	25	-	-
Unknown	3	100	3	100	1	33	1	33	1	33	1	33	1	33	-	-
All	148	90	144	88	65	39	57	35	34	21	80	48	41	25	7	4

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329) other functions/services were considered important (with an average score of 3.7 each): union catalogs, union lists of serials, reciprocal borrowing, and continuing education for staff.

Generally, there are only a few variations among types of libraries and their indication of importance of networking functions or services (as demonstrated in Table 6). Institutional libraries seem to consider that union catalogs and union lists of serials, as well as, information retrieval, interlibrary loan, reciprocal borrowing and document delivery are not as important as the other libraries do (2.7 vs. 3.7; 2.4 vs. 3.7; 2.8 vs. 3.5; 2.5 vs. 3.7, respectively). In many other instances they consider the functions or services to be much more important. On the other hand, private academic libraries consider union catalogs and union lists of serials as being much more important than do the other types of libraries (4.4 vs. 3.7 and 4.6 vs. 3.7). Federal libraries consider document delivery to be much more important than do the other libraries (4.3 vs. 3.1 for all libraries).

Respondents were asked to indicate the relative importance of issues relating to cooperative activities and networking which should be addressed in a formal statewide plan for library automation and networking (again on a scale of one to five). All of the issues addressed had average scores of importance of 4.0 to 4.3, as shown below (see Table 7 for more detail):

• Membership and role of individual types of libraries in a statewide network	(4.2)
• Membership and role of individual types of libraries in regional consortia	(4.0)
• Governance of the network	(4.1)
• Structure of the network	(4.2)
• Costs and pricing	(4.2)
• Sources of funding	(4.3)
• Hardware requirements	(4.1)

TABLE 6

Importance of Network Services, by Type of Library

AVERAGE RATINGS (ON A SCALE OF 1-5) OF PERCEIVED IMPORTANCE
TO THE LIBRARY OF FUNCTIONS/SERVICES WHICH CAN BE OFFERED THROUGH
A LIBRARY NETWORK OR COOPERATIVE ARRANGEMENT, BY TYPE OF LIBRARY, 1985

	Type of Library										
Function/Service	Public	Institutional	State Supported	Community College	Private University & College	School	State & Local Government	Federal Government	Other	Unknown	All
Union catalogs	3.9	2.7	3.8	4.2	4.4	3.2	3.0	3.8	3.6	4.0	3.7
Union lists of serials	3.7	2.4	4.5	4.2	4.6	3.3	3.8	3.8	3.6	4.0	3.7
Union lists of audiovisuals	2.9	3.0	2.7	3.5	3.7	3.4	2.8	2.7	1.9	3.3	3.0
Information retrieval	3.2	2.8	3.3	3.6	3.8	4.0	2.8	3.8	3.4	4.0	3.5
Interlibrary loan	4.5	3.8	4.7	4.5	4.7	3.9	4.4	4.2	4.0	4.8	4.3
Reciprocal borrowing	4.0	2.5	3.9	3.9	3.8	3.6	3.2	4.0	3.0	4.0	3.7
Document delivery service	3.0	1.9	3.9	3.2	3.7	3.1	2.5	4.3	3.0	3.5	3.1
Materials booking/scheduling	2.8	2.9	1.8	2.9	2.7	3.1	2.0	2.3	1.3	3.0	2.6
Shared staff expertise	3.5	4.0	3.3	3.5	3.2	3.8	4.3	3.0	3.0	3.3	3.5
Shared cataloging	3.4	3.1	3.6	3.7	3.7	3.3	3.8	3.2	2.4	3.5	3.3
Cooperative purchasing	2.2	2.7	2.3	2.3	2.7	2.7	2.8	2.7	1.9	3.5	2.4
Cooperative collection development	2.7	2.8	2.9	2.5	3.4	3.0	3.0	2.8	2.1	3.3	2.8
Continuing education for staff	4.2	4.2	3.0	3.7	3.3	3.9	3.3	2.7	3.3	4.0	3.7
Shared communications systems	3.4	2.8	3.7	3.4	3.7	3.4	3.0	2.9	2.5	3.8	3.3
Shared storage and warehousing	2.0	2.0	2.4	1.7	2.2	2.3	2.5	2.7	1.7	3.0	2.1
Shared consulting	3.4	2.9	2.7	3.0	2.7	3.5	2.3	2.5	2.5	4.0	3.1
Cooperative research & development	2.8	2.6	3.1	2.6	3.0	3.3	2.0	2.5	2.6	3.5	2.9
Cooperative market research	2.9	2.5	2.5	2.5	2.8	2.7	2.3	2.5	2.2	3.5	2.7
Joint public relations programs	3.3	2.7	2.2	2.7	2.2	3.5	2.0	1.9	1.6	3.5	2.8
Publishing of union lists, specialized bibliographies	3.1	2.7	3.4	3.7	3.2	3.4	3.8	3.2	3.0	3.5	3.2
Index of local, regional, state publications	3.9	3.0	3.5	3.5	3.4	3.6	2.8	2.9	3.2	4.0	3.5
Other	4.4	5.0	4.3	-	5.0	-	-	5.0	-	-	4.6

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 7

Importance of Issues on Cooperative Activities for Inclusion in Formal Networking Plan, by Type of Library

AVERAGE RATINGS (ON A SCALE OF 1-5) OF IMPORTANCE OF ISSUES
RELATING TO COOPERATIVE ACTIVITIES TO BE ADDRESSED IN A FORMAL STATEWIDE PLAN
FOR LIBRARY AUTOMATION AND NETWORKING, BY TYPE OF LIBRARY, 1985

	Type of Library										
Function/Service	Public	Institutional	State Supported	Community College	Private University & College	School	State & Local Government	Federal Government	Other	Unknown	All
Membership and role of individual types of libraries in a statewide network	4.4	3.9	4.6	4.3	4.5	3.9	4.3	3.4	3.8	4.7	4.2
Membership and role of individual types of libraries in regional consortia	4.2	3.7	3.9	4.1	4.3	3.8	4.3	3.5	3.9	4.0	4.0
Governance of network	4.4	3.5	4.2	4.5	4.5	3.9	3.5	3.3	3.8	4.3	4.1
Structure of network	4.4	3.8	4.4	4.6	4.4	4.0	3.3	3.7	3.8	4.7	4.2
Costs and pricing	4.3	4.2	4.3	4.6	4.6	3.9	4.3	4.0	3.9	5.0	4.2
Sources of funding	4.5	4.4	4.6	4.8	4.6	4.2	4.3	3.4	3.6	5.0	4.3
Hardware requirements	4.3	3.9	3.8	4.4	4.3	4.1	3.8	3.9	3.5	4.7	4.1
Performance requirements	4.5	3.8	4.5	4.3	4.1	4.0	4.0	4.0	3.8	4.7	4.2
Performance of monitoring and evaluation	4.4	3.6	4.2	4.1	4.1	4.1	4.0	4.0	3.4	4.3	4.1
Staff training at the local level	4.3	4.3	3.5	4.4	3.9	4.2	4.3	3.6	3.7	4.3	4.1
Other	4.8	-	4.7	5.0	5.0	-	-	-	-	5.0	4.8

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

• Performance requirements	(4.2)
• Performance monitoring and evaluation	(4.1)
• Staff training at the local level	(4.1)
• Other	(4.8)

Agreement among the types of libraries as to the importance of these issues was very high.

The libraries clearly consider funding to be the most important factor in the development of in-state interlibrary cooperation and resource sharing (see Table 8). Respondents indicated the relative importance of conditions that encourage cooperation, with availability of funding (4.6) and funding and support at the state level (4.4) both ranked very high among the positive conditions. Furthermore, lack of funding (4.6) had the highest ranking of inhibiting conditions (1 being not inhibiting and 5 being very inhibiting). Willingness to share was given an importance score of 4.6 in conditions that encourage cooperation, and uncooperative attitude had a score of 4.3 as an inhibiting condition. Since the inhibiting score is lower, they may feel this negative influence could be overcome. A similar argument can be made for state support: a 4.5 score for funding and support at the state level as an encouraging condition versus a score of 4.3 for lack of support at the state level as an inhibiting condition. Support at the local or institutional level is very important for encouragement (4.4) and is also considered a potential inhibiting condition (4.3).

Other factors important in encouraging cooperation are improved effectiveness to patrons (4.3), improved performance (4.1), and existing cooperative activities (3.7). Inhibiting factors include insufficient personnel (4.0) and unpreparedness of libraries in the state (3.9). The various types of libraries seem to be in agreement as to the importance of conditions that encourage cooperation and the degree to which conditions might inhibit cooperation. However, the greatest disagreement among library types appears to be with two conditions that could inhibit cooperation: (1) unpreparedness of libraries in the state and (2) insufficient personnel.

TABLE 8

Conditions that Encourage Cooperation, by Type of Library

AVERAGE RATINGS (ON A SCALE OF 1-5) OF CONDITIONS THAT WILL ENCOURAGE DEVELOPMENT
OF IN-STATE INTERLIBRARY COOPERATION AND RESOURCE SHARING, BY TYPE OF LIBRARY, 1985

	Type of Library										
Conditions that Encourage Cooperation	Public	Institutional	State Supported	Community College	Private University & College	School	State & Local Government	Federal Government	Other	Unknown	All
Willingness to share	4.6	4.6	4.4	4.7	4.7	4.7	5.0	4.6	4.3	4.5	4.6
Funding and support at state level	4.5	4.6	4.9	4.7	4.4	4.5	4.3	4.3	4.0	4.0	4.5
Availability of funding	4.7	4.7	4.9	4.7	4.6	4.5	3.5	4.5	4.2	4.0	4.6
Local or institutional support	4.4	4.3	4.2	4.4	4.4	4.5	4.2	4.0	4.3	4.5	4.4
Improved performance	4.1	4.3	4.2	3.9	4.0	4.3	4.0	4.0	3.8	4.8	4.1
Improved effectiveness to patrons	4.4	4.3	4.0	4.2	4.2	4.4	4.0	4.0	4.1	4.5	4.3
Existing cooperative activities	3.7	4.1	3.3	3.7	3.5	4.0	4.0	3.4	3.3	3.8	3.7
Other	4.8	-	-	4.0	4.0	5.0	-	-	-	5.0	4.7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

There is a wide discrepancy among types of libraries and their perception of their degree of readiness to implement their own automation activities and to engage in automated networking activities at the regional and/or statewide levels. These perceptions of readiness were solicited using a readiness scale of one to seven with one (1) being low readiness and seven (7) being high readiness. Overall the readiness scores are quite low: 3.5 for the library's own automation activities and 3.1 for automated networking activities.* Tables 9 and 10 show that readiness varies greatly among types of libraries and even within a type of library when comparing readiness for the library's own automation activities versus automated networking activities. Only institutional libraries consider themselves more ready to implement their own automation activities. Special libraries generally consider themselves to be less ready than the other types of libraries for automated networking activities. Generally the state-supported academic libraries are most ready for both automation at the local and regional or statewide levels, but institutional libraries are the least ready to implement their own automation activities, and state and local government libraries the least ready for automated networking activities.

4.4 General Automation

In the last section we showed that libraries in the state of Virginia perceive themselves at a low degree of readiness for automation. In fact only about one-half of the libraries currently utilize automation in some way. The proportion of libraries that currently use some form of automation varies considerably among different types of libraries as shown in Table 11. All types of academic libraries are heavily engaged in library automation, although community college libraries are to a lesser degree (62% vs. 84% private and 95% state-supported). Only 13 percent of the institutional libraries utilize automation, whereas the remaining types of libraries have between 33 percent and 50 percent utilizing automation.

---

* Note that if the scales were one to five as in the other importance and inhibiting scores, the scores would probably be about 2.5 and 2.2, respectively.

TABLE 9

Readiness to Implement Own Automation Activities, by Type of Library

AVERAGE DEGREE OF OVERALL READINESS (ON A SCALE OF 1-7) FOR LIBRARIES TO IMPLEMENT THEIR OWN AUTOMATION ACTIVITIES, BY TYPE OF LIBRARY, 1985

Type of Library	Average Degree of Readiness
Public	3.6
Institutional	2.0
Academic	
State-Supported	5.2
Community College	3.8
Private University & College	4.3
School	3.1
Special	
State & Local Government	3.0
Federal Government	4.0
Other	2.7
Unknown	4.3
All	3.5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 10

Readiness to Engage in Automated Networking Activities, by Type of Library

AVERAGE DEGREE OF OVERALL READINESS (ON A SCALE OF 1-7) OF LIBRARIES TO ENGAGE IN AUTOMATED NETWORKING ACTIVITIES AT THE REGIONAL AND/OR STATEWIDE LEVELS, BY TYPE OF LIBRARY, 1985

Type of Library	Average Degree of Readiness
Public	3.3
Institutional	2.4
Academic	
State-Supported	4.8
Community College	2.7
Private University & College	4.3
School	2.7
Special	
State & Local Government	1.7
Federal Government	2.4
Other	1.9
Unknown	3.8
All	3.1

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 11

Current Use of Automation, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES THAT CURRENTLY UTILIZE AUTOMATION, BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries	Proportion (%)
Public	39	49
Institutional	3	13
Academic		
State-Supported	18	95
Community College	13	62
Private University & College	21	84
School	33	38
Special		
State & Local Government	3	33
Federal Government	9	50
Other	19	43
Unknown	2	50
All	160	49

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

As one might expect, only 16 percent of the very small libraries currently utilize automation and 88 percent of the very large libraries do (see Table 12). The proportion of libraries that currently utilize automation does not vary much among regions (ranging from 39% in the Southern region to 55% in Piedmont as shown in Figure 4).

Very few (5%) of the libraries indicate that they had utilized automation in the past for some functions which are no longer automated. Community colleges have the largest proportion (18%) which may partially explain why fewer of them than other academic libraries utilize automation at present.

The proportion of automated libraries that utilize automation to support specific functions are listed below:

• Cataloging (current)	58%
• Reference (including access to online databases)	43%
• Retrospective conversion	34%
• Interlibrary loan	34%
• Catalog maintenance	31%
• Administrative support	29%
• Circulation	26%
• Microcomputers for public use	23%
• Other	23%
• Acquisitions	19%
• Public access catalog	12%
• Serials control	7%
• Document delivery	5%
• Materials booking and shelving	3%

There is some variation among regions of the state in the number of libraries using automation for each function. Looking at the most frequently implemented functions, automated cataloging varies from 38 percent of the libraries in the Southwest to 72 percent in the Northwest. The Southwest has the lowest incidence of automated reference (25%), compared with the Northern region (57%) with the highest.

TABLE 12

Current Use of Automation, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES THAT CURRENTLY
UTILIZE AUTOMATION, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Number of Libraries	Proportion (%)
< 10,000	8	16
10,000 - 99,999	60	42
100,000 - 500,000	54	83
> 500,000	21	88
Unknown	17	37
All	160	49

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

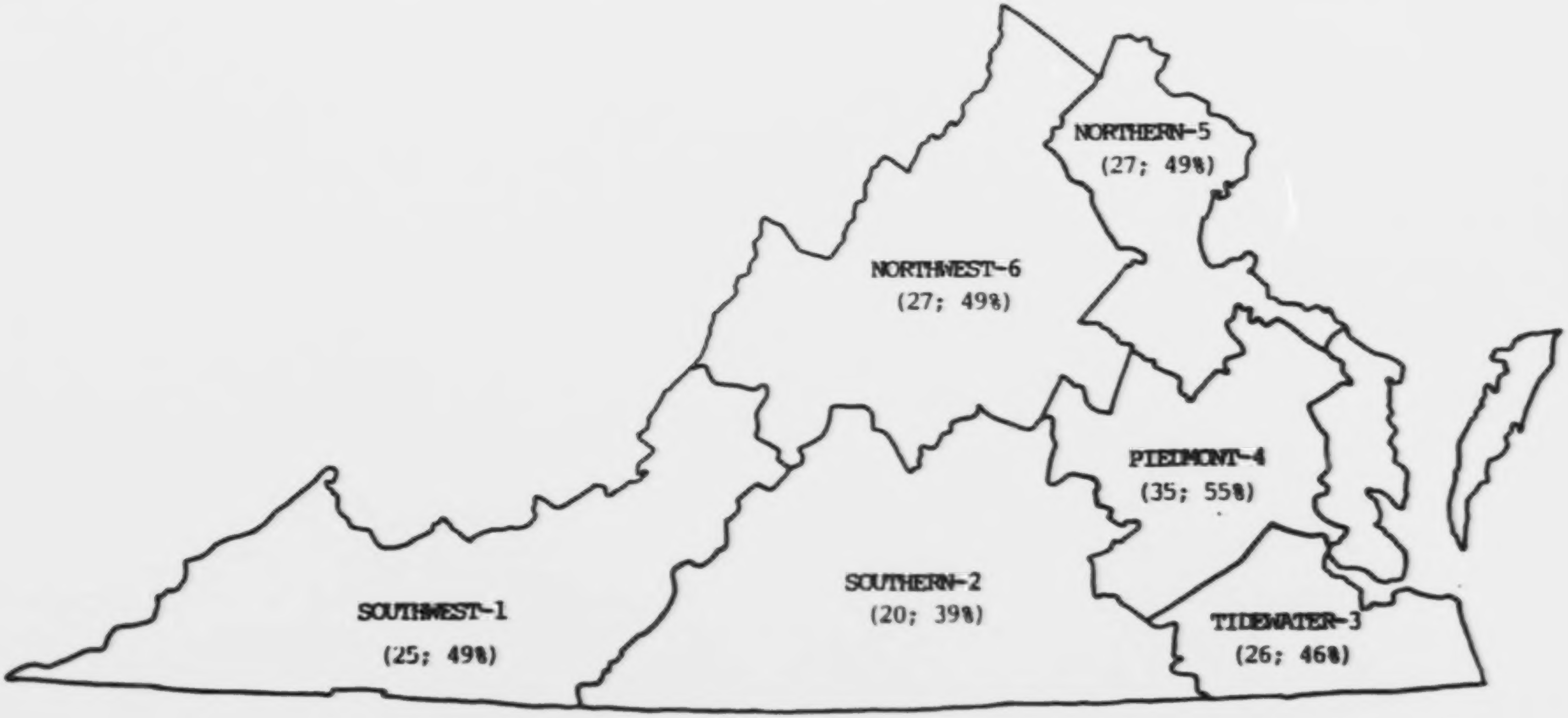

NORTHERN-5
(27; 49%)
NORTHWEST-6
(27; 49%)
PIEDMONT-4
(35; 55%)
SOUTHERN-2
(20; 39%)
SOUTHWEST-1
(25; 49%)
TIDEWATER-3
(26; 46%)

Figure 4 Number of Libraries in Each Region that Currently Utilize Automation in Virginia (proportion is of all libraries in each region responding to the survey), 1985

Many of the libraries have implemented automated data communications to support their functions. For example, 26 percent have dedicated telephone connections, 25 percent have dial-up telephone connections, 17 percent have hardwire connection to computers, and two of the reporting libraries have microwave connections. About 27 percent of the libraries have an automated system in the library that communicates with other libraries' automated systems. Interestingly, across regions there is little difference in the extent of use of dedicated telephone connections or dial-up telephone connections. However, the proportion of libraries with hardwire connections varies from three percent (Southwest) to 39 percent (Northern). These data communications capabilities vary substantially among types of libraries. Very few institutional libraries and school libraries have such capabilities, whereas most of the state-supported academic libraries have all the types of communications capabilities except microwave. The two reported microwave capabilities are implemented in a federal and a community college library.

One indicator of the degree of readiness of libraries to proceed with automation at the local, regional or statewide level is the extent to which bibliographic records have been created in, or converted to, machine-readable form in a standard format. For example, Virginia libraries have about 6.2 million machine-readable title records in full MARC format an 3.2 million in other formats. Most of those records in machine-readable form are for books or monographs (5.2 million in MARC format and 1.2 million in other formats). However, it must be noted that many libraries included the total number of title records for most/all types of printed materials in this category, with the possible exception of total title records for serials which often were listed separately. Most of the title records for government documents, when identified specifically, are in other (i.e., non-MARC) formats (1.6 million). In addition to bibliographic records, a little over one million patron registration records are currently in machine-readable form.

There are a number of major benefits or advantages that can be derived from library automation. Those libraries that currently utilize automation considered the importance of various benefits of automation (on a scale of 1 to 5) to be:

Improved performance or efficiency	4.4
Improved effectiveness to patrons	4.4
Increased productivity	4.3
Improved record keeping	4.1
Improved management of resources	4.0
Improved information services	3.8
Improved access to local resources	3.6
Building local expertise and experience	3.6

Neither ability to search online catalogs of (1) their own library nor (2) other libraries from a remote location were considered particularly important (2.8 each). These two low-ranking benefits also resulted in the greatest variation among types of libraries for all the benefits or advantages mentioned. None of the benefits seemed to vary much among regions.

Respondents to the survey were asked to rate the importance (on a scale of 1 to 5) of various issues relating to the development of in-state automated systems and networks which should be addressed in a formal networking plan. The most important of these was selection of automation systems (4.2) and education and training of staff (4.2), as shown below:

Selection of automation systems	4.2
Education and training of staff	4.2
Performance requirements	4.1
System vulnerability and backup options	4.0
Performance monitoring and evaluation	4.0
Ownership of automated systems	3.9
Operation and management of host computers	3.9

Of even lesser importance (3.7 to 3.3) are location of host computers, system security and privacy of files, education training of patrons, document delivery systems, and materials booking and scheduling (in decreasing order of importance).

Specific concerns that libraries have about automation include, in particular:

• Start-up costs	4.4
• Continuation costs	4.4
• Choice of most appropriate system to best meet the library's needs	4.3
• Communications costs	4.2
• Compatibility with other systems	4.1
• Reliability	4.0
• Training staff and patrons	4.0

The least important concern is reduction in staff (2.4). However, other lesser concerns (3.7 to 3.3) include data/record security from unauthorized modification/deletion, lack of technical expertise, data/record privacy, obsolescence, increased workload, and data/record privacy.

Finally, libraries were asked their preference for roles they might play in a statewide resource sharing and automation plan. As might be expected, the most important roles are as a user of a statewide system (3.9) and as a user of a consortium system (3.5). However, note that the difference in preference for these two roles is not all that great. Having no role at all in a statewide plan was very low in preference (1.7). Furthermore, serving as a host for other libraries and as a co-owner of a system were not high preferences (2.0 and 2.4, respectively). On the other hand, serving as an owner of an in-house automated system was more preferable (3.3).

Encouraging libraries to serve as a host may be a problem. Only ten percent of the libraries indicated that it would be feasible for them to act as a host to other libraries' databases on their own automated systems. However, another 24 percent said that they might be able to act as hosts. Only public libraries had over 50 percent indicating that they could or might be able to act as hosts.

Problems that the libraries indicated they might encounter if they were to host other libraries' databases included:

Cost allocation	28%
Insufficient terminal communications capacity	25%
Prioritization of workloads	25%
Response time degradation	21%
Ownership of data	21%
Responsibility to meet performance criteria	21%
Security and privacy of files	15%

All in all, the libraries indicate that their current state of readiness (in terms of staff preparation and attitudes, and availability of equipment) to support other libraries' databases on their systems is quite low (2.7 on a scale of one to seven). The variation among regions ranges from 2.0 in the Northern region to 3.5 in the Southern region.

There are several conditions that libraries believe will encourage the development of automated systems and networks in the state. Nearly all the libraries (86%) thought that funding and support at the state level was such a condition. Many (60%) believed that availability of local funds is such a condition as well. Fewer felt that the current state of automation in in-state libraries (49%) and exposure of the general public to automation were conditions. Very few of the libraries (5%) indicated that constraints to automation would come because the library or funding agency have policies that may discourage participation in automation activities.

General satisfaction with performance of all the various automated systems in the libraries is quite high (with an overall average score of 4.1 on a scale of 1-5, one being very unsatisfied and five being very satisfied). Institutional and federal libraries are the least satisfied with automation (3.0 and 3.5, respectively). The average remaining scores among types of libraries range from 4.0 to 4.3.

Detailed tabulations of the survey responses are presented in Appendix B of this report.

SECTION 5

NEEDS AND CONCERNS OF VIRGINIA LIBRARIES

5.1 Library Needs

The survey of Virginia libraries and the discussions with various groups of librarians throughout the state identified several library needs that might be met by the development of a more formal networking configuration in Virginia. The most significant and far reaching need identified by libraries of all types, sizes and locations is the need to be able **to identify library holdings statewide**. The identification of **special and research collections** was seen as particularly important, as was the need to identify **serials holdings** throughout the state. There was some indication that **regional serials holdings lists** should be developed to facilitate interlibrary loan and document delivery. At the same time, it was recognized that regional holdings lists cannot support all the requirements of libraries within a region and access to the holdings of other regions is also needed.

Access to the holdings of all types of libraries was considered important. Public and academic libraries indicated a need to have access to each others' collections, as did academic and special libraries. Access to public library and community college collections was considered important by school libraries in order to support collections which are often fairly limited in both size and scope. Use of collections outside the school library also enables students to develop skills in recognizing the availability of a variety of community information resources. This is one of the standards of learning (SOL) objectives for library/information use, of the State Department of Education.

Clearly, Virginia has already begun to develop a statewide database of library holdings through the Virginia database operated by The Computer Company and CAVALIR, the microfiche product derived from the database.

However, the progress made thus far in the development of the database is seen as only the first step. The database contains only 12 percent of the total unique title holdings in the state (see Section 7.4.3). A parallel first step has been taken by the CHE in supporting the development of the Tidewater union list of serials. This also needs to be expanded to include more holdings.

While a statewide database of all types of library holdings is considered the nucleus of a statewide library resource sharing network, it, by itself, is not seen as the one, complete, self-contained solution to library resource needs. Thus, there is a need, particularly among academic research and special libraries, to develop and maintain reciprocal resource sharing arrangements with libraries outside the state and to continue to participate in multi-state and national library networks.

Another major focus of need, and one which was thought would benefit considerably by formalizing library networking in the state, is document delivery. Several librarians mentioned the newly developed, lower cost telefacsimile technologies. The need to plan a library network that would incorporate telefacsimile transmission of documents was expressed particularly by academic librarians. Furthermore, the newly emerging commercial document delivery services are of considerable interest and should be evaluated relative to interlibrary delivery, from the perspective of cost and performance. Most libraries indicated a need for faster delivery of materials through interlibrary loan.

The ability to identify the holdings of individual libraries throughout the state and to place interlibrary loan requests for needed items was considered only a partial solution to the resource sharing needs of libraries. This capability would be considerably extended by the provision of current availability information about needed materials. Two kinds of availability information can be provided. One is whether materials are held for reference purposes only, or whether they are available for loan. The second kind of availability information relates to the current circulation status of materials. These types of availability information are typically supported by automated circulation systems and online catalogs and, therefore, imply a need for libraries to automate.

Automation needs were seen as being solved largely through shared systems. The majority view was the development of automated systems shared by all types of libraries within a region. In particular, libraries felt the need for the development of formal opportunities for small libraries to work together or with larger libraries in order to share an automated system which they would not be able to afford to purchase or maintain individually.

Many librarians expressed the need for **compatibility among automated library systems** throughout the state so that they could be linked into a formal network. In fact, the need for the **development of intersystem interfaces** so that various automated library systems actually in use in the state can be linked, was seen by many as a priority area for the future.

In order to facilitate such development, it was suggested that an agreement on **standards for bibliographic records maintained in network databases** was needed, so that duplication of effort in record maintenance can be avoided, and interfaces can be simpler to develop. Also needed is compatibilty of local/regional automation plans with other automated systems/networks in the state.

In addition to the need for standards for automated systems, a need for a set of **well defined protocols for network use** was identified. One of the concerns of libraries (see later in this section for more discussion of concerns), particularly in larger libraries, is that the ready availability of statewide holdings information will increase the volume of interlibrary loan requests and overload the relatively small proportion filling the majority of requests (the classic 80:20 rule applies generally). Thus there is a perceived need for a set of protocols for using the network for interlibrary loan which would distribute the load more equitably throughout the state. At the same time, the idea of compensation for lenders or net lenders arose. The **need to reimburse libraries for loaning materials** to other libraries in the state was considered a high priority by both libraries that are net lenders and net borrowers. A related need that was identified was the need for establishment of **standardized charges for various types and levels of service** (e.g., standardized charges for loan of materials and for production of photocopies).

A set of needs emerged, not surprisingly, related to **funding**. State funding support was considered critical to the entire enterprise of a formal statewide network. This was seen as including adequate funding to support network development and ongoing operations; funding for restrospective conversion and automation projects in all types of libraries; and funding to maintain and strengthen existing special collections and Centers of Excellence. The need was expressed for funding mechanisms to **provide network support monies directly to participating libraries rather than to the institutions to which they belong**, in which case monies often dissipate into general overhead categories or pet institutional projects. Finally, libraries see the continued evolution of networking activities as providing an opportunity to qualify for federal LSCA funds.

Other types of needs related to the **sharing of non-collection resources** among libraries throughout the state, for example, the sharing of information and expertise among librarians within and across regions in the state. There was a need expressed for the **availability of consulting support at the state level** to assist in automation planning and network development. In rural areas, in particular, there is a need for the "circuit rider" types of consultants who can provide needed expertise and advice in the libraries themselves. Similar in nature is the need for a source of information on consultants and speakers with specific library-related expertise.

In a more formal networking configuration, librarians indicated that their **educational and training requirements** could be better served. There is clearly a need for a coordinated continuing education program for Virginia librarians, particularly as there is no graduate school of library and information science in the state, other than Catholic University's extension classes. A need was also expressed for cooperative programs for training or upgrading non-MLS staff in libraries. Finally, if a more formalized network configuration is developed, its success will be dependent to a large extent on a program of training for staff of individual libraries on how to use the network and its associated protocols and procedures.

Other areas of need involved various activities which are often expensive when conducted on an individual basis, but which can be performed cooperatively at reduced overall costs. One such activity is the **negotiation of bulk volume discounts** with vendors/suppliers of library services and materials. For example, formal cooperative programs could be designated for selected reference services such as those offered by SOLINET, BRS and DIALOG. Another activity is the need for **more formal cooperative collection development** and acquisition of expensive materials throughout the state. A third such cooperative activity is **cooperative cataloging and technical processing services**, needed especially by smaller libraries. Yet another area which can benefit substantially from coordination across libraries of all types is the **retention, storage, and preservation of infrequently-used materials**.

Another set of identified needs relate to **communications**. The formalizing of a library network structure should offer a better means for interlibrary communications for a variety of purposes including interlibrary loan requesting, transmission of messages, identification of materials statewide, and so on. The need for improved communications is particularly important for libraries in remote parts of the state. The use of the voice telephone network for the identification of holdings, circulation status, and interlibrary loan requesting is seen as inadequate. A formal library network based on a distributed set of automated systems linked via telecommunciations is seen as a means to provide better and faster communications. Also related to communications is the need for a **central source of information on meetings and other events** relevant to libraries throughout the state.

Two important needs that were considered important to the success of a formal statewide network were the **need to accommodate different levels of participation** in the network because of costs or other constraints on individual libraries, and the need for the network **to offer tangible returns for participation** in order that individual libraries can justify expenditures associated with networking. Both of these needs were stressed by special libraries.

Finally, in order that a more formal network be a viable operating network, need was seen for a **formal contract between individual network participants and the suppliers of network services** and for a **formal framework and guidelines to structure evolving networking initiatives** in the state. It is the intent of the long-range plan to be developed in Phase II of this project, should a more formal network structure be considered feasible and appropriate, to provide such a framework and guidelines.

5.2 Concerns Regarding the Formalizing of Library Networking in Virginia

Library cooperation and networking has existed for many years in Virginia through some formal state-coordinated projects and many informal projects. The concept of a more formal statewide library network has been considered and discussed over the years with the result that many librarians have a fairly well-defined idea of what such a network should be like, what services it should offer, and what they would not like to see happen. A number of different concerns regarding the formalizing of library networking in Virginia were expressed.

Perhaps the most far reaching concerns involve the **interpretation of the term "networking"**. To some, the term means interlibrary loan, to others it implies a physical computing and telecommunications network, to others it means any kind of cooperative activity. Many librarians felt that networking should be defined as broadly as possible so that the plan emerging from this study would provide a framework within which a full range of cooperative activities and services can be developed. Furthermore, it was considered important that a single plan be flexible enough to accommodate the full range of networking activities that might arise during its fifteen year implementation period.

Another concern relates to the **establishment of a formal network organization**. There is considerable feeling that library-related organizations proliferate and do not achieve their intended objectives; that is, the setting up of a new organization does not in itself achieve anything and often draws available funds to support the bureaucratic process. Rather, it is preferred that the networking plans should facilitate direct library to library cooperation and not add another step in the process of interlibrary communication and cooperation.

Another significant area of concern is the **inclusion of all types of libraries in the network**. It was expressed that all types of libraries have something to offer each other. Particular concerns included support for the needs of rural communities and support for school libraries which may not be open at convenient times for their students, and which may have limited collections which are inadequate for advanced level courses and other programs for the gifted.

The librarians indicated that the goals of any network should be to **provide a means for helping each library in the state to operate more efficiently** and **provide more or better services and products without increasing costs**. There has been considerable thought given to how these goals might be met. Networking by type of library is considered the best approach to support the needs of the academic library community, although it is generally recognized that other types of libraries would need to access any academic library network (or sub-network) that might be established. Other librarians generally felt that a regional multitype approach to networking would be more appropriate and would facilitate materials delivery.

Regardless of the actual configuration developed for a statewide network, a major concern expressed universally is that the **network be flexible**. It should be flexible enough to **accommodate local needs and requirements**. It should be flexible enough to **accommodate multiple types of automated library systems**. Finally, it should be flexible enough so that **individual components of the network** (notably automated systems) **are expandable and upgradeable**.

Underlying this notion of flexibility, are the concerns that there be **multiple levels of participation by libraries in the network** and the **ability to move from one level to another** as local or network circumstances change. This would also incorporate the concern for **local autonomy**, as each individual library would retain the option of participating at multiple levels.

Librarians felt very strongly that **representatives of all types of libraries must be involved in network planning**. In the planning process, the roles of individual libraries in any cooperative effort must be carefully defined, so that areas of responsibility are clear. Furthermore, the **services to be provided should be clearly identified**. Finally, the **administrators of parent institutions should be kept informed of the planning process** (and especially of the major findings and developments emerging from this study), so that they may have adequate opportunity to prepare for active participation in any ensuing networking activities.

In fact, there was some consensus on the part of private institutions that legislation is needed to ensure appropriate representation in any networking plan that may be developed. This need is somewhat offset by the concern with state control in higher education on the part of private colleges. Nevertheless, **the establishment of a statewide network through appropriate legislation is seen as a factor that is likely to contribute to a successful venture**, much more so than the establishment of a networking group with no real authority to enact the plan.

Governance of a statewide network was seen as a major area of concern by many. For example, the structure of the governing body should be such that the needs of all types of participants would be represented. Those from smaller libraries were concerned that network direction might be dominated by the larger, and automated, libraries.

Another frequently mentioned area of concern is **funding**. Funding concerns range from the fact that federal funds for library support are diminishing, to the fear that participation in networking may incorrectly suggest to administrators that local library funding can be reduced (particularly in the area of materials budgets or staffing). Concern was also expressed that network funding should not result in reduced availability of state aid monies for other library programs.

Most librarians recognize the orders of magnitude of costs associated with network development statewide. One concern is **who should pay for such development**. Another concern is **whether network services** should be **provided free of charge or not**. If network services are charged for, there was a general feeling that standardized charges for various types and levels of service should be established.

Regardless of the means by which network activities and services are funded, there was concern that **network participation be made economically feasible to all libraries** (consistent with different levels of participation), and that **the costs and benefits of network participation** (at each level) **be clearly demonstrated**.

The larger academic and public libraries expressed concern that the expansion of existing networking activities statewide and ready access to holdings information would **increase the demand for interlibrary loans**. The concerns here are twofold. First, increased demands for interlibrary loans require more personnel resources to cope with the load. In particular, those libraries acting as "hosts" for other libraries databases would incur additional work to support the administrative and technical aspects of providing services to network participants. Further, there is a general concern that in addition to increased numbers of requests for materials and services, more requests will be made for access to online databases as the levels of sophistication of library users increase. Librarians are concerned that their **level of participation in networking activities may be constrained by staffing limitations**.

The second area of concern regarding increased demands relates to the **need to maintain levels of service to one's immediate community**. One of the reasons why academic libraries, in particular, feel that networking by type of library is most appropriate for them is that cooperation within their own community is rather different, in both nature and scope, from support of the "public-at-large"; the former group is directly relevant to their mission, and the latter group is only secondarily relevant. Overall, there was a concern that **adequate protocols be developed to ensure a more equitable distribution of requests among libraries**.

In addition to the expected increase in demand for interlibrary loan, there is a concern that **more reciprocal borrowing privileges may develop**. The concern with direct reciprocal borrowing is twofold. First, the responsibility for tracking materials not returned on time falls on the lending library and increases their burden. Second, there is increased use of the facilities of the lending libraries, thereby reducing space available for their primary patrons.

The development of library automation capabilities throughout the state is seen as the basis from which a statewide network can grow. Some of the concerns regarding automation relate back to the concepts of flexibility and autonomy in decision-making at the local level. One of the more prevalent concerns, particularly among libraries that have automated to some extent, is that **a single automated system may be selected and designated as the system to be used for participation in the network**. It is the general opinion among all types of libraries that no single system could possibly support the different needs of individual libraries.

Another concern related to automation relates to **the role of the Virginia database, CAVALIR, in a network of the future**. Too considerable an amount of funding and effort has been invested in its creation for it to be discarded. Thus, whatever is planned for the future should be built upon what exists today.

Most librarians in the state believe that a statewide network will evolve based on a series of interconnected automated systems. It is further assumed that not every library will be able to, or even want to, acquire and operate its own automated system. Instead, the idea of "host" nodes in the network is discussed. One concern regarding these "hosts" is that **the support of various library functions through a shared automated system is dependent upon the ability of the host to upgrade its existing system to support adequate input/output channels and terminal ports, disk storage, etc.** This dependency on the "host" may result in some of the network participants being unable to automate certain functions as and when they are ready to do so.

Yet another concern regarding automation is **the burden placed on the individual librarians in having to learn additional protocols and procedures**. A similar burden will be placed on patrons.

Related to automation are a set of concerns regarding **telecommunications**. This is seen by many as the weakest component of networking efforts (not just in Virginia, but generally), as often several telephone companies and jurisdictions are involved. Further, line noise is often a problem with data transmission. Any network plan should be developed to **optimize telecommunications facilities** which are operational or planned. Because of the telecommunications situation, a regional approach to networking is favored by many over a type-of-library approach. **Telecommunications costs** are high (and rising) and seen as a potential barrier to effective networking. The need for ready availability of technical advice to resolve some of the communications problems is considered a priority by some. Finally, at another level, school libraries are also concerned about telecommunications as many do not even have a telephone in the library. Thus, other means for participating in networking should be designed.

There is a natural concern for the **development of and adherence to standards for the network**. Mentioned specifically were standards for bibliographic records entered in a network database (whether it be a simple centralized database or a distributed one). At the same time as advocating the adherence to standard record formats, concern was expressed that the formats should be flexible to accommodate local library editing of records and use of local conventions in selected fields. Furthermore, materials purchased for reference use only should be so marked in bibliographic databases so that effort is not wasted on attempting to acquire these items on interlibrary loan.

Special libraries in particular were concerned that they have **the capability to establish "private bibliographic files" to maintain the security of proprietary and classified materials**. They also were concerned that transaction records of interlibrary loan activities and use of bibliographic information remain confidential to overcome concerns of revealing proprietary interests.

Two further concerns related to standards are that **response times of the automated systems and network should be maintained at specified levels** so that as participation increases the response times do not degrade, and that **evaluation plans should be developed for networking activities** and implemented on a regular basis. Automated systems within the network should provide adequate statistical reports of both overall network activity and individual library activity.

The final set of concerns expressed relate to **participation of libraries in other networks**. Many libraries currently participating in OCLC, for example, would like to continue to take their place in a national network. A similar concern is that **a statewide network should not duplicate existing networks**.

In summary, it would appear that most librarians are of the opinion that a more formal network configuration in Virginia would benefit them, provided that it is carefully planned and does not exclude libraries from participating in other networks. The network must be flexible to adapt to local needs and changing priorities, yet must incorporate sufficient standardization to ensure compatibility and quality.

SECTION 6

ANALYSIS OF STATEWIDE NETWORKING ACTIVITIES IN OTHER STATES

Networking at the state level is still based predominately on informal regions of cooperation, established to promote resource sharing. OCLC is the most common basis for interlibrary loan, whether or not there is a formal network structure in place. Although almost all state libraries are at least talking about networking, not many are yet ready to implement a networking plan. However, several states are installing integrated systems and several other states are considering networking plans. Five states have established formal networks, each based on a statewide union database.

The information on networking activities in other states is grouped into the following five categories:

- states with a statewide database and a formal network structure;
- states which have selected a vendor for a statewide integrated library system;
- states actively planning for an integrated system;
- states with a statewide database and informal network;
- states considering network plans.

Each of these categories of networking activity is described below.

6.1 States with a Statewide Database and a Formal Network Structure

- **Colorado** - based on a statewide interlibrary automated communications facility, which includes the ability of one agency to access the host computer of another agency to request patron and/or bibliographic information, to determine availability of an item, and to request the loan.

- **Connecticut** - resource sharing based on six independent Cooperating Library Service Units (CLSUs).

- **Kansas** - based on the Kansas Library Network, established in 1981, to recommend statewide priorities for ILL and resource sharing, develop an annual networking plan, and review and evaluate policies.

- **Utah** - The Utah Network of Cooperating Libraries promoting resource sharing using OCLC.

- **Washington** - based on the Washington Library Network for ILL, reference and referral, telecommunications and computer systems; and the Library Planning and Development Division of the State Library for materials delivery.

6.2 States Which Have Selected a Vendor for a Statewide Integrated Library System

- **Hawaii** - nineteen libraries are currently hooked up to the ULISYS circulation system for ILL, inventory control, bibliographic serarching, reserve placement and electronic messaging.

- **Nevada** - currently developing a library mechanism to connect all libraries in the state to one of four CLSI systems.

- **New Hampshire** - the ILL subsystem of the LS/2000 system will be functional in 1985, with acquisitions to follow.

- **South Dakota** - in the final preparation stages of retrospective conversion and planning for a late 1986 implementation using the BLIS software.

- **West Virginia** - currently loading 700,000 titles from public, academic, and special libraries, and the State Library into the VTLS system.

139

6.3 States Actively Planning for an Integrated System

- **North Dakota** - awaiting a report due January 1986.
- **South Carolina** - currently undergoing vendor selection and entering year one of the three-year implementation plan. The online catalog and circulation/ILL modules are to be implemented this year.
- **Vermont** - the Department of Libraries is signing a joint contract with the University of Vermont and Middlebury College for an online catalog, which will include all libraries in the state in five years.

6.4 States with a Statewide Database and Informal Network

- **Alaska** - based on the WLN-produced COM catalog and three regions for resource sharing.
- **Arizona** - OCLC is used as the state's database. The state is working toward establishing closed county networks, backed up by the newly created Interlibrary Loan and Reference Centers.
- **Arkansas** - a COM catalog is produced periodically from OCLC tapes. There are five public library development districts.
- **California** - the statewide database is being loaded into OCLC. There are 15 public library systems and various informal multitype networks.
- **Delaware** - a statewide COM catalog is produced annually from OCLC tapes. There are three regional networks.
- **Georgia** - OCLC is used as the statewide database. Cooperation is based on the multitype Georgia Library Information Network.

- **Kentucky** - libraries are still building the statewide database via OCLC. The Kentucky Cooperative Information Project (KENCLIP) supplements the informal public library network.

- **Illinois** - the University of Illinois is loading all libraries' OCLC tapes into its system to create a statewide database. ILLINET and 18 regional library systems provide resource sharing.

- **Indiana** - the statewide database is maintained by INCOLSA using OCLC. INCOLSA and nine Area Library Service Authorities (ALSAs) handle resource sharing.

- **Maine** - all major libraries use OCLC. There are three multitype regional districts.

- **Maryland** - the online database is maintained using Auto-Graphics' AGILE II system. An automated networking system links all major resource centers.

- **Michigan** - OCLC is the basis for the statewide database. Fifteen regions of cooperation have been established for resource sharing.

- **Minnesota** - OCLC is the basis for a state database. There are 13 regional public library systems and 7 multitype cooperatives. MINITEX and PLANET provide back-up services.

- **Mississippi** - the online database is being developed using AGILE II. Libraries are encouraged to join regional systems.

- **Montana** - the first edition of the state's COM catalog (MONCAT) was produced in January 1985 by WLN. There are six public library federations.

- **Nebraska** - has just completed a five-year network development plan and automation guidelines for libraries in the state. A formal network arrangement has been established as a pilot project to demonstrate the feasibility of multitype library cooperation. The Reference Interloan Center based at Kearney State College supports ILL and reference requests for all libraries in two of the state's system service areas. The Nebraska union COM catalog, NEUCAT, contains the holdings of 55 major libraries in the state, produced primarily from OCLC tapes. Online access to this data is under consideration. Currently 60 libraries use the Nebraska Library Communications System (NeLCmS) to transmit ILL requests and other messages.

- **New Mexico** - the ILL module of OCLC is used for resource sharing.
- **Oklahoma** - OCLC is used as the statewide database. There are 15 multitype library transmission sites for ILL.
- **Texas** - OCLC is the basis for a statewide database. The Texas State Library Communications Network (TSLCN) consists of 10 major resource centers.
- **Wisconsin** - the statewide database is maintained via Brodart and includes OCLC, MARC and MITINET input records. There are 17 public library systems in the state and several layers for ILL support.

6.5 States Considering Networking Plans

- **Alabama** - a study is currently underway to develop a statewide plan for resource sharing and automation. Decentralized resource sharing is currently facilitated by the Alabama Library Information Network (ALIN). The state is looking into linking systems.
- **Florida** - a study is currently underway to develop a long range library automation and network development plan for the state. The Florida Center for Library Automation (FCLA) was recently established by the legislature to provide automation support to all of the libraries in the State University System using the

NOTIS/FOCUS software, and to provide services to other libraries in the state.

- **Idaho** - resource sharing is currently based on the WLN Resource Directory. The State Library is undergoing a major reorganization and is seriously considering automation plans, including linking diverse circulation systems.

- **Iowa** - the code was recently changed to allow multitype cooperation. The state is seeking funding to implement Phases 2 through 4 of an automation plan. Phase 1, to be implemented this summer, is a microcomputer-based system which routes ILL requests.

- **Massachusetts** - a statewide automation plan, adopted in 1983, provides the basis for linking integrated systems throughout the state.

- **Missouri** - recent legislation has given the seven resource networks legal status and will most likely result in increased funding for networking, including linking the statewide database and the University of Missouri system.

- **New York** - there is an active interest in linking the many automated systems. A 1984 preliminary automation plan recommended regional planning and data conversion as prerequisites for linking the systems.

- **North Carolina** - a networking steering committee has been established as the result of a 1982 networking feasibility study. The state is actively building a statewide database and funding pilot zones of cooperation projects.

- **Ohio** - a 1981 plan for multitype cooperation includes development of a statewide database, and provision of a statewide delivery system and funding for communications systems.

- **Oregon** - the state is preparing an automation plan. The State Library has recently automated with DRA, and various other regional linked systems are in progress.

- **Pennsylvania** - a program called Access Pennsylvania has been instituted to provide access to materials throughout the state, resulting in a series of studies evaluating resource sharing, technology, and improving local support of libraries.

- **Rhode Island** - the Interrelated Library Network is looking at linking existing CLSI systems.

- **Tennessee** - a 1985 study examined applications for automation throughout the state, based on the existing regional library system structure. The study recommended utilizing a bibliographic utility for cataloging and building a statewide database.

More detailed information regarding statewide networking activities is included in Appendix A. The following information is supplied when applicable and available:

- General library functions supported by networking activities;

- Administrative structure of a formal network (including size of membership, types of libraries, governance of the network, and funding);

- Technological structure, including hardware and telecommunications links;

- Network operations - specific services, standards, reimbursement plans and delivery systems;

- Summary of automation plans.

SECTION 7

EVALUATION OF EXISTING LIBRARY AUTOMATION AND NETWORKING CONFIGURATIONS IN VIRGINIA

7.1 Introduction

The evaluation of existing library automation and networking configurations in Virginia was conducted from four distinct perspectives:

- technical
- economic
- operational
- political.

This breakdown of the evaluation into four perspectives helps to gain a further understanding of current configurations and how they can be improved.

To some extent the evaluation of existing library automation and networking configurations in Virginia is dependent of one's view of a more formal configuration. The current situation could be formalized in a number of different ways. Furthermore, one of the major outcomes of our analysis of data collected is that more libraries would like to be involved in networking activities. This could be considered **expansion** of existing activities, but not necessarily formalization. Underlying many discussions of library networking is the use of automation and telecommunications. While automation does impose a formalization on systems and procedures, we are concerned that it not be considered the only means of formalizing. Instead we have defined the following possible formalizing mechanisms:

- develop legislation;
- establish a network organization;
- develop membership criteria;
- design procedures and protocols for interaction;
- develop equalization/compensation schemes;
- adopt minimum (or other levels) standards of performance;

- adopt automation;
- adopt a common telecommunications system for interlibrary communications and messaging.

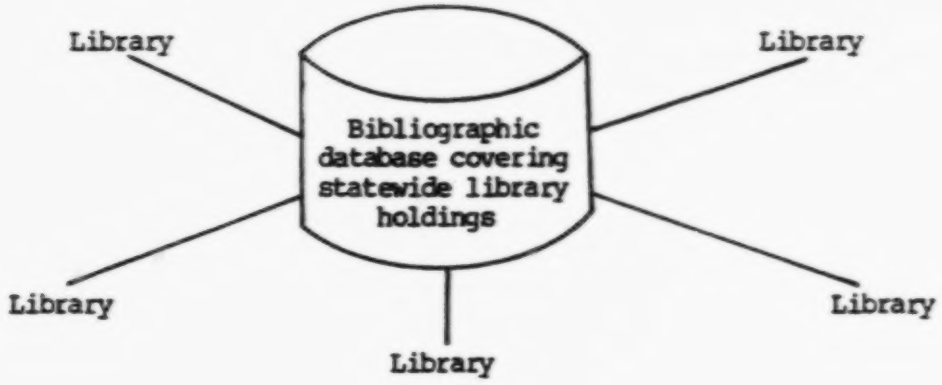
Any combination of these mechanisms would enable libraries in Virginia to formalize their interactions in different ways. Most of these mechanisms are feasible to implement, provided that libraries want to formalize, are willing to support moves towards formalization that are coordinated at the state level, and secure appropriate levels of funding. Even at the minimum levels of formalization, there is a cost associated with implementation, operation, and monitoring of activities.

The more difficult formalizing mechanism to evaluate is automation, and it is at this level that our feasibility analyses are performed.

7.2 Alternative Networking Configurations

In designing an automated library network, it is possible to identify a complete spectrum of alternative configurations, ranging from totally centralized to totally decentralized. To simplify the process of selection, we will define four basic approaches and outline the advantages and disadvantages of each approach for libraries in Virginia.

7.2.1 Approach 1. Totally Centralized



In this approach, a single centralized bibliographic database is developed using one or more retrospective conversion strategies. Individual libraries would then be able to search the database for items needed and locate the holding library. An ILL request could then be made to that library either directly or through a centralized electronic mail system. The item would be delivered to the requesting library, using one of the listed strategies, when it is available.

Development of a centralized approach to networking could be achieved in Virginia by providing online access to an expanded version of CAVALIR, the Virginia database. The database could continue to be available online at The Computer Company or could be made available online through services provided by another vendor (e.g., SOLINET, Auto-Graphics, the McDonnell Douglas Corporation). An electronic mail system could be provided by the network support vendor.

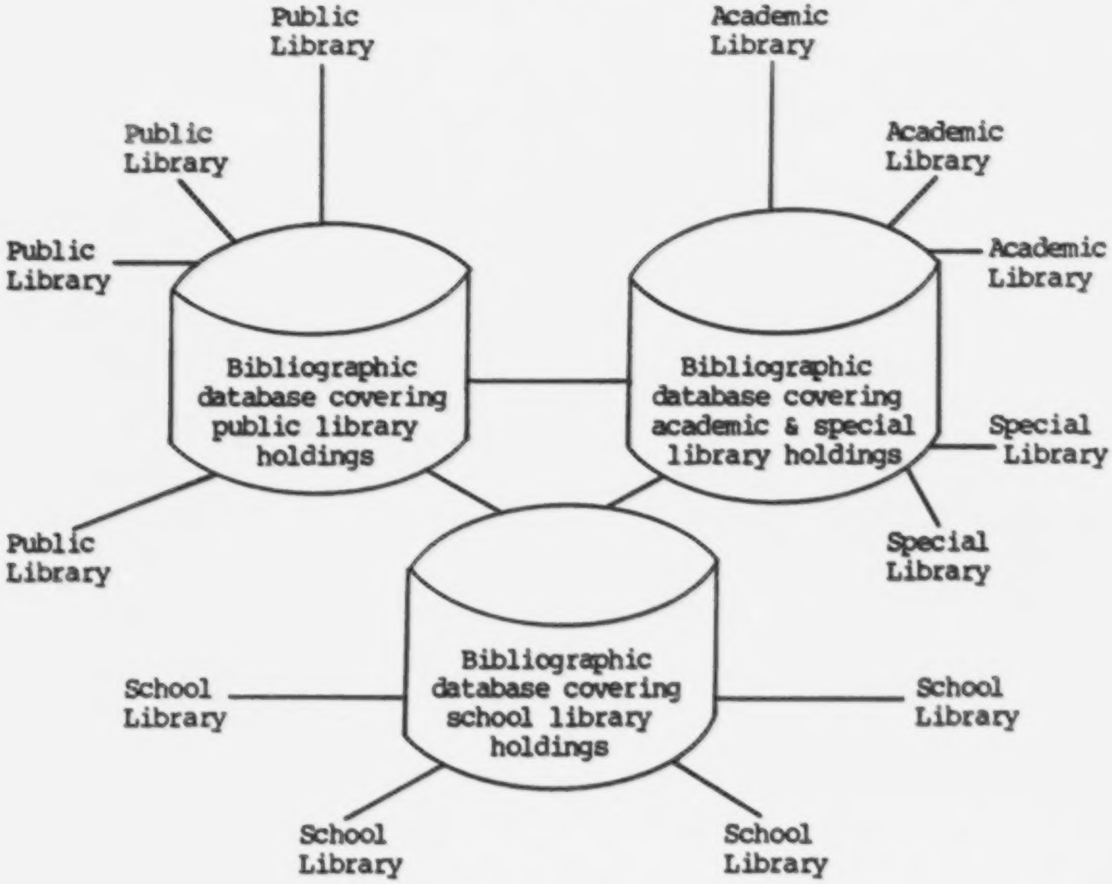
Advantages of Centralized Approach

- no redundancy in database;
- libraries only need to perform one search to identify and locate items;
- share costs of equipment with other libraries;
- share costs of system acquisition, operation, and enhancement with other libraries.

Disadvantages of Centralized Approach

- need for large scale computing equipment to store a full database;
- cost of communicating with database could be high for remote libraries;
- complete vulnerability to system failure.

7.2.2 Approach 2. Decentralized by Type of Library


Public Library
Public Library
Public Library
Public Library
Bibliographic database covering public library holdings
Academic Library
Academic Library
Academic Library
Bibliographic database covering academic & special library holdings
Special Library
Special Library
Bibliographic database covering school library holdings
School Library
School Library
School Library
School Library

This approach builds upon some of the existing cooperative activities among libraries in Virginia. Thus, a separate database would be created for each of the public, school, and academic library communities. Special libraries would form part of the academic system. These databases would be linked together. A library would then search the database relevant to its type first and, if nothing is found, would then switch to the other databases. If the required item is located, the request could be placed either directly to the holding library or placed in an electronic mail system associated with the database for the type of holding library.

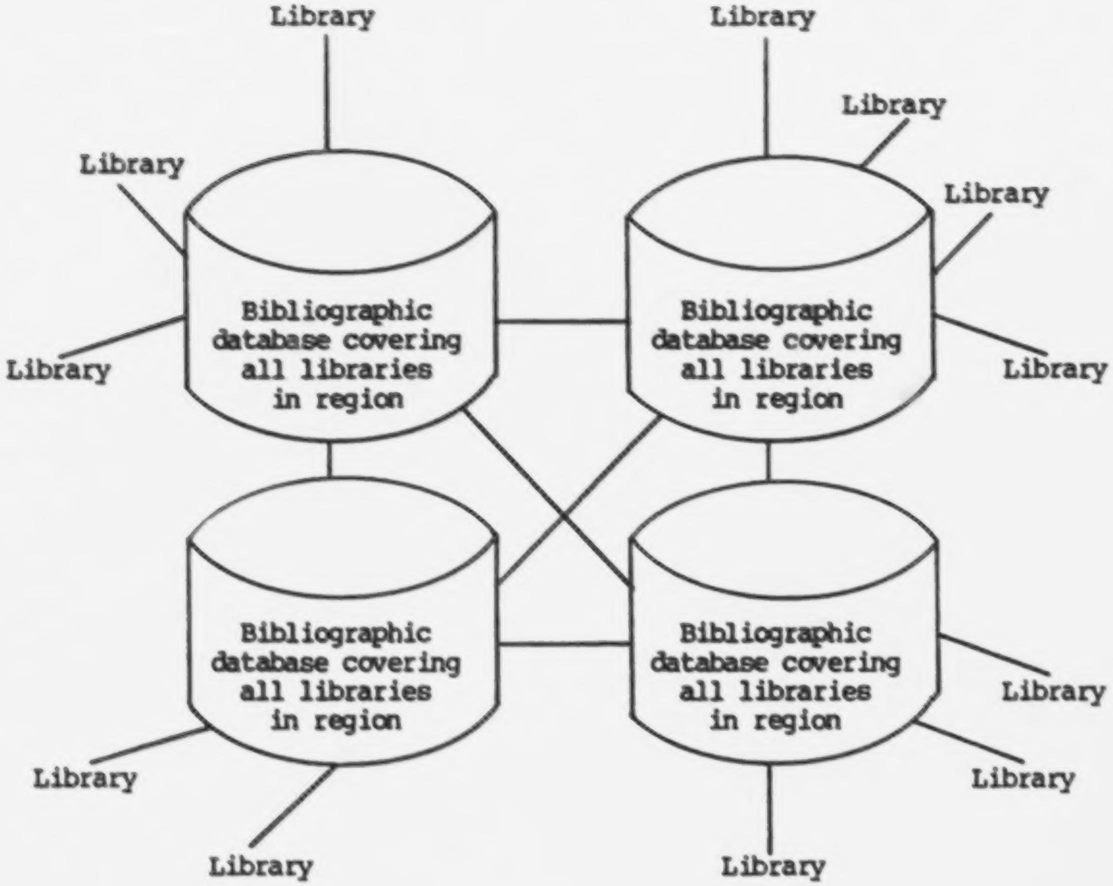
Advantages of Decentralized by Library Type Approach

- more likely to identify and locate items for the respective patron groups;
- share costs of equipment with other libraries;
- share costs of system acquisition, operation, and enhancement with other libraries;
- may be easier to establish interlibrary loan arrangements with libraries of the same type;
- particularly for school and public libraries, could make use of existing centralized processes and resources.

Disadvantages of Decentralized by Library Type Approach

- may have to perform multiple database searches before locating item;
- cost of communicating with database could be high for remote libraries;
- some redundancy in database.

7.2.3 Approach 3. Decentralized by Region


Library
Library
Library
Library
Library
Library
Library
Bibliographic database covering all libraries in region
Bibliographic database covering all libraries in region
Bibliographic database covering all libraries in region
Bibliographic database covering all libraries in region
Library
Library
Library
Library
Library
Library

In this approach, all libraries in a region would have their holdings information in a regional database. Each library would search its own regional database first to locate items. If nothing is located, then they would switch to neighboring regions' databases. Requests could be placed either directly at the holding library or in an electronic mail system associated with the regional database of the holding library.

Advantages of Decentralized by Region Approach

- more likely to identify and locate items held by libraries that are geographically close, which can result in faster, less expensive delivery;

- share costs of equipment with other libraries;

- share costs of system acquisition, operation, and enhancement with other libraries;

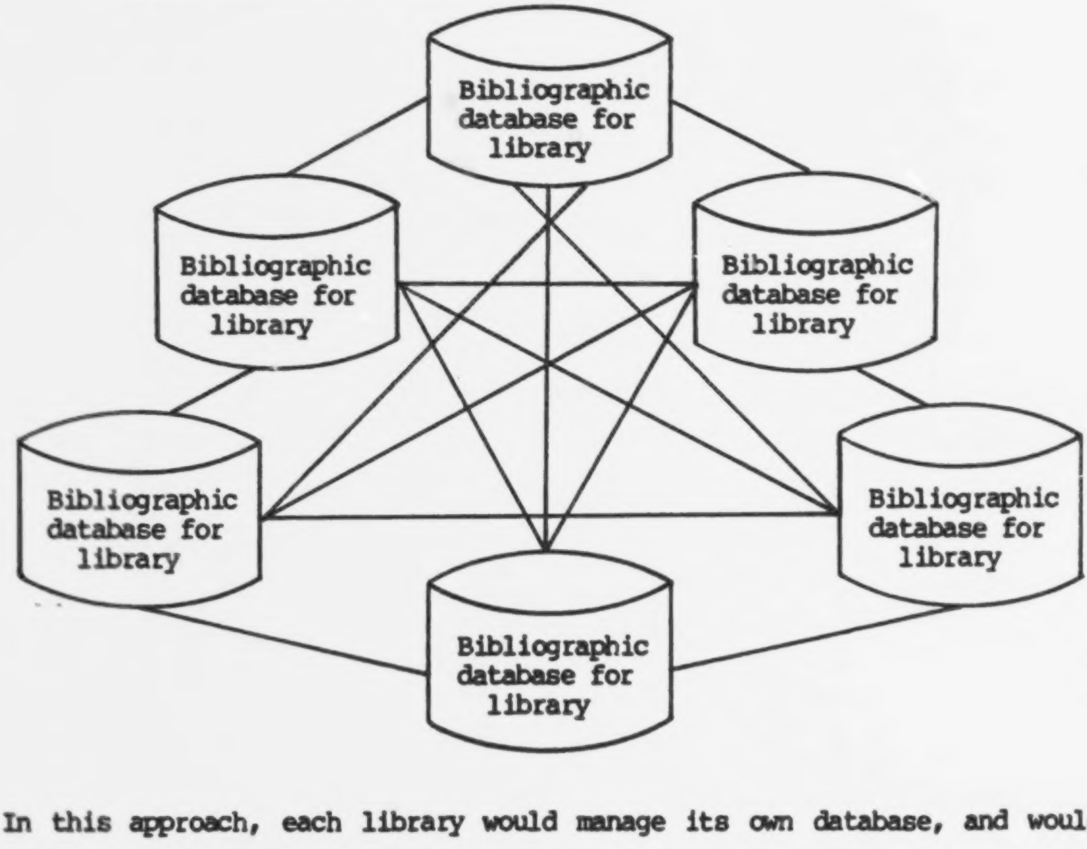
- cost of communication with database should be relatively low due to proximity of database.

Disadvantages of Decentralized by Region Approach

- may have to perform multiple database searches before locating item;

- some redundancy in databases.

7.2.4 Approach 4. Totally Decentralized


Bibliographic database for library
Bibliographic database for library
Bibliographic database for library
Bibliographic database for library
Bibliographic database for library
Bibliographic database for library

In this approach, each library would manage its own database, and would search the databases of other libraries, in turn, to locate an item. Once located, the request could be placed directly at the holding library.

Advantages of Totally Decentralized Approach

- Complete control over own database.

Disadvantages of Totally Decentralized Approach

- much redundancy in the respective databases;
- multiple searches probably required;
- communication costs could be high for accessing remote libraries;
- all equipment, development, and operational costs are assumed by each of the libraries, respectively.

7.3 Technical Assessment

The technical assessment is based on the current and projected capabilities of current configurations in terms of their ability to support current and projected needs, including expanding databases, increasing numbers of libraries participating, and increasing the functions performed. Furthermore, the potential for interconnection of existing systems will be explored.

In addition to reviewing the current and projected capabilities of automation and networking configurations, the technical assessment will consider how to upgrade them to meet current and future library needs. Alternative ways of upgrading current configurations are based on a review of successful networking structures implemented elsewhere, and on our understanding of prevailing library trends. These upgrades could include the acquisition of more computer storage, more computer processors, more communication lines, more powerful equipment, etc.

A total of 160 or 49 percent of the libraries responding to our survey indicated that they currently utilize automation in some way. The proportions of automated libraries that use automation to support various library functions are summarized below:

• cataloging (current)	58%
• reference	43%
• retrospective conversion	34%
• interlibrary loan	34%
• catalog maintenance	31%
• administrative support	29%
• circulation control	26%
• microcomputers for public access	23%
• acquisitions	19%
• public access catalog	12%
• serials control	7%
• document delivery	5%
• materials booking/scheduling	3%
• other functions	23%

The results are fairly positive in that a fairly large proportion of Virginia libraries have already started to use automation. The greatest number of libraries use automation for current cataloging. This is to be expected since the basis for library automation is the development of a bibliographic database of holdings. Of the libraries that have automated cataloging, at least 83 percent are using systems and services which support the MARC format. Again, this is a positive result, since at least 82 percent of those libraries that are creating machine-readable records are using compatible formats.

Technically, from the cataloging perspective, formalization already exists to some extent, largely through the development of the Virginia database. The use of automated systems and services for developing machine-readable bibliographic data is clearly feasible and could be expanded to include other libraries throughout the state.

Another feature that would build naturally upon the expanded Virginia database is an interlibrary loan module which would enable requests for materials to be placed directly at the time that holding libraries are identified. The implementation of such a feature would provide immediate benefits from the perspective of the borrowing libraries.

Once a machine-readable bibliographic database exists and is used, the next feature that is generally needed is current availability information. This is provided by circulation systems. In Virginia, approximately 13 percent of the libraries are using automated circulation systems. Automated circulation is, therefore, an area that could be considerably expanded throughout the state.

A number of different automated circulation systems are in place in libraries throughout the state. The most common automated circulation system in use is the Apple II-based Book Trak (produced by Follett). A total of nine libraries, most of them school libraries, are currently using this system. Other automated circulation systems with more than one installation in the state are VTLS (8), DataPhase (7) and LS/2000 (4). At least 13 other systems are being used by single libraries.

The extent to which automated library systems can support library networking is dependent on the ability of automated systems to communicate with each other. Overall, 27 percent of the libraries that have automated already have systems which can communicate with other automated systems. This result, however, is somewhat misleading, as the levels at which interconnection can be achieved is not identified.

Systems interconnection is a complex area which is variously interpreted. At the low end of the capabilities spectrum is the ability to connect two computers together to send and transmit "bit streams" or coded sequences of characters and numbers. This capability is generally provided by most hardware manufacturers, through the RS 232C protocol. The only exceptions to the standard provision of an RS 232C communications capability are some of the microcomputer manufacturers, although most of them are now making communications boards available as optional features of their products.

The availability of this feature means that individuals with terminals or microcomputers with communications capability can access automated library systems with the same communications board. Through the provision of some password, an individual could, therefore, access any model of automated library system that the operating library has, provided that the library has not imposed limitations on access. The individual can use this system to search and retrieve information, or to input and store information in the language of the system.

The above terminal-type access to a library's automated system can be provided to terminal users of other libraries' systems through the same basic interface. Depending on the way each system handles its terminals, some special-purpose software may need to be developed to enable terminals on one system to bypass that system and be "switched" to other libraries' systems as desired.

More and more vendors are providing software that enables the same terminals to access multiple systems without burdening the terminal user with a range of logging-in protocols and procedures. The main concern at this level of access is that the more different systems that are linked in this way, the more query languages and software systems the user has to learn. Research has shown that while users are able to cope with two sets of commands and procedures fairly well, higher multiples result in greater confusion and less effective and efficient use of users' time. Thus, if the automated library systems in place in Virginia libraries at the present time were interconnected using this relatively unsophisticated level of interface, it would be detrimental to both librarians and library patrons, negating the advantages which libraries are attempting to derive from automation. It should be recognized that the use of other libraries' systems would not constitute the majority of the users' access to automated systems, but the notion of having to cope with a minimum of 17 different systems is overwhelming.

At the next level of interconnection capability is the ability to use the automated systems of other libraries utilizing the command and procedures of one's own library system. This level of interface is not yet fully developed, but is the focus of a number of independent research projects, such as the Irving Project in Colorado, and the Linked Systems Project of the Library of Congress.

The interconnection of different systems is a function of the hardware; software (operating system, applications software); file structure, format and codes; and communications capability. Compatibility of these components of systems ensures that, technically, interconnection can be achieved. At a different level of consideration are the policy issues (either library policy or institutional policy) that enable the interconnection to take place. Both aspects are extremely important, particularly in large scale networking projects involving many different types of institutions. In assessing the extent to which automated library systems installed in libraries in Virginia can interface with each other, or with other automated library systems that are available, both technical and policy aspects need to be considered.

In reviewing the automated circulation systems currently in use at libraries in Virginia, a total of 10 commercially-available automated library systems and 7 in-house systems can be identified.* They are:

- Book Trak
- Book Worm
- DataPhase
- DIALOG
- Dynix
- Gaylord
- Geac
- LS/2000
- Pueblo
- VTLS
- In-house systems -- not specified

---

* Note that an additional 3 systems are in the process of being installed or tested (CLSI, DRA, NOTIS)

All of these systems should be capable of linking to each other at the minimum level of interface. With some additional software development they should be able to provide a simple mechanism for switching from one system to another. We estimate that it would take approximately one month of programmer effort to develop the software needed to link each pair of systems. The total number of interfaces that would be required is 136 (assuming that the systems listed above were the only ones in existence within Virginia libraries).

It is unlikely that such a highly distributed system is desirable, especially as the interfaces themselves may need to be changed as the systems being connected change. Furthermore, with this level of interface a total of 17 different procedures and protocols for searching the files would have to be developed.

The scale of the problem is reduced somewhat when we consider only those systems that are capable of supporting MARC databases. Only 5 systems would be involved, requiring only 10 interfaces. At the lower level of interface, such a linkage would be manageable. However, at the transparent interface this would still involve a considerable amount of systems analysis, design, and programmer effort. The plans that emerged from this study must provide the means by which to ensure that libraries are not excluded from participation in automation and networking activities in the state if interfaces have not yet been developed. Rather, it should provide interim mechanisms which will be gradually replaced as more sophisticated interfaces are developed.

Most libraries indicated that their automated systems and machine-readable files are protected by password and allow "public" users read-only access. Approximately 17 libraries with automated systems indicated that there may be restrictions imposed on access to their systems and machine-readable files. Most of these restrictions involve staff-only access to machine-readable files and automated systems. However, as only 12 percent of the libraries with automated systems may be constrained in this way, the development of linkages among existing automated systems will not be seriously impeded. Nevertheless, the plan to be developed should address this issue of restricted access, as many of the libraries currently not automated may find similar constraints imposed on them. Alternatives for allowing libraries with such restrictions to participate in statewide networking activities need to be developed. Two types of restrictions can be imposed. The first relates to accessing the automated system. For example, an institution may not allow external users to access a system because sensitive information may be mounted on it. (This sensitive information may or may not be library related). The second type of restriction relates to whether or not the library holds material that is classified or proprietary. If so, such material may be described and indexed in an automated system which would not be made available for public use.

At the present time, most of the automated systems in use in Virginia libraries could be interconnected to provide a minimal level of access to each other. More sophisticated access among all systems is likely to be too costly for the slight improvement in performance and effectiveness that would be achieved. Thus we recommend that alternative solutions be explored to allow all libraries to access machine-readable bibliographic and holdings data, while intelligent, transparent interfaces are in development.

A further recommendation relates to the Common Network Language (CNL, a parallel to the EURONET Common Command Language, CCL) in the early stages of definition at the Library of Congress. This type of basic communications language facilitates the interfaces that have to be developed. Instead of linking VTLS internal file structures and commands to CLSI internal file structures and commands, for example, both VTLS and CLSI are linked to the common (and minimum) set. All systems implementing the CNL will be searchable using the CNL in addition to their own proprietary languages. It is to be expected that, as the CNL develops, it will be provided by the vendors of automated library systems as an optional feature, and, eventually, as a standard feature in much the same way that the communications capabilities were provided. We recommend that developments with the CNL be monitored closely.

In considering various levels of automation that could be implemented as part of a more formal networking configuration in Virginia, we defined a series of activities which provide increasingly sophisticated capabilities:

- expand access to CAVALIR on fiche or laser disk;
- provide expanded online access to CAVALIR;
- expand the Virginia database to include other libraries' holdings;
- provide an electronic messaging system for ILL and other communications;
- expand automated systems to support circulation control for libraries in Virginia;
- expand automated systems to support online public access catalogs for libraries in Virginia;
- interconnect automated systems.

One of the major components of automated networks is the communications mechanism. Telecommunications in particular, are of concern in developing a statewide library network using some form of automation. Concerns fall into two categories: costs and service areas.

Since the break-up of AT&T, the costs of telecommunications through voice and data linkages operated by telephone companies have greatly increased. This year prices are expected to rise between 12 and 70 percent, depending on exact location in the U.S. Libraries using automation for interlibrary loan purposes only do not generate a high volume of telecommunications traffic, so increased prices do not have a massive effect, although they are still significant. Libraries that use remote automated systems for cataloging, circulation control, or for an online catalog do generate tremendous volumes of data to be transmitted between local terminals and remote processors.

Virginia is divided into 5 LATAs (Local Access and Transport Area), or service areas, as shown in Figure 5. Communications organizations are able to provide services within designated LATAs (see Figure 6), with only a few companies allowed to provide cross-LATA communications. Within a LATA, tariffs are negotiated and controlled at the state level, but cross-LATA communications involve a substantial surcharge. Heavy volume long-distance communications across the state can aggregate costs fairly rapidly, although discounts are available for bulk volumes of traffic.

One particular development of direct relevance to this study is that the Commonwealth of Virginia is now studying the feasibility of establishing a comprehensive, statewide communications network over the next few years. This network would be designed to carry all types of message formats including audio, video, data, and telemetry. An important development relating to the communications feasibility study is the interest expressed by representatives of the Department of Information Technology (DIT) in ensuring that library telecommunications needs are incorporated into their planning. It is our recommendation, if Phase II of this library automation and networking study is approved, that discussions continue between representatives of King Research and DIT.

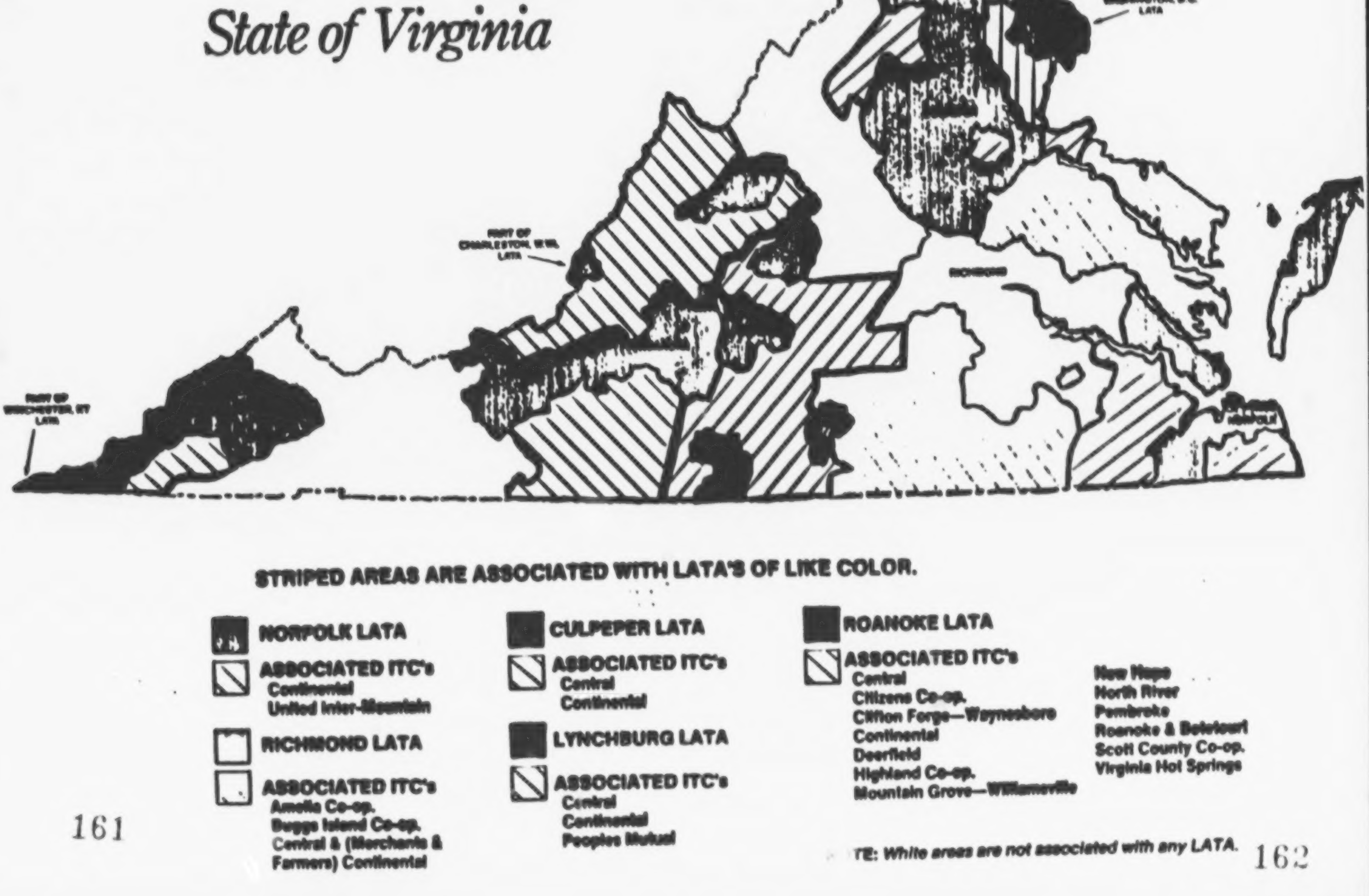
7.4 Economic Assessment

In this section the approximate costs to implement various stages of formalization of library networking in Virginia are summarized. The costs presented in this Phase I report are order-of-magnitude costs which may serve as generalized guidelines for estimating costs for the different services/products which could be provided by a Virginia library network. The Phase II report will develop the cost data in considerably more detail.

7.4.1 Expand Access to CAVALIR

At this first level of formalization, it is anticipated that all libraries in Virginia would receive CAVALIR and acquire a microfiche reader with which to access it. We estimate that there are currently about 2,108 libraries in Virginia. Of these 17 have direct online access to the database, and 271 currently receive the microfiche set. The cost per addition-

Figure 5. LATAs in Virginia


State of Virginia
PART OF WASHINGTON, D.C. LATA
PART OF CHARLESTON, W.VA. LATA
PART OF WINCHESTER, KY LATA
RICHMOND
NORFOLK
NORFOLK LATA
ASSOCIATED ITC's
Continental
United Inter-Mountain
RICHMOND LATA
ASSOCIATED ITC's
Amelia Co-op.
Buggs Island Co-op.
Central & (Merchants & Farmers) Continental
CULPEPER LATA
ASSOCIATED ITC's
Central
Continental
LYNCHBURG LATA
ASSOCIATED ITC's
Central
Continental
Peoples Mutual
ROANOKE LATA
ASSOCIATED ITC's
Central
Citizens Co-op.
Clifton Forge—Waynesboro
Continental
Deerfield
Highland Co-op.
Mountain Grove—Williamsville
New Hope
North River
Pembroke
Roanoke & Botetourt
Scott County Co-op.
Virginia Hot Springs

STRIPED AREAS ARE ASSOCIATED WITH LATA'S OF LIKE COLOR.

TE: White areas are not associated with any LATA.

VIRGINIA INDEPENDENT TELEPHONE COMPANIES

▨	1	AMELIA TELEPHONE CORPORATION
■	2	BUGGS ISLAND TELEPHONE CORPORATION
▨	3	BURKE'S GARDEN TEL. EXCHANGE
▨	4	CITIZENS TELEPHONE COOPERATIVE
■	5	CENTRAL TELEPHONE COMPANY OF VIRGINIA
▤	5A	THE MERCHANTS & FARMERS TELEPHONE COMPANY
▨	6	CLIFTON FORGE-WAYNESBORO TELEPHONE COMPANY
□	7	CONTINENTAL TELEPHONE OF VIRGINIA
▨	8	DEERFIELD TELEPHONE COMPANY, INC.
◧	9	GENERAL TELEPHONE COMPANY OF THE SOUTHEAST
□	10	MOUNTAIN GROVE-WILLIAMSVILLE TELEPHONE COMPANY
▨	11	HIGHLAND TELEPHONE COOPERATIVE
◩	12	NEW HOPE TELEPHONE COMPANY
▨	13	NORTH RIVER TELEPHONE COOPERATIVE
□	14	PEMBROKE TELEPHONE COOPERATIVE
▨	15	PEOPLES MUTUAL TELEPHONE COMPANY, INC.
▨	16	ROANOKE & BOTETOURT TELEPHONE COMPANY
▨	17	SCOTT COUNTY TELEPHONE COOP., INC.
▨	18	SHENANDOAH TELEPHONE COMPANY
■	19	UNITED INTER-MOUNTAIN TELEPHONE COMPANY
▨	20	VIRGINIA HOT SPRINGS TELEPHONE COMPANY
■	21	C & P TELEPHONE COMPANY OF VIRGINIA

Figure 6. Virginia Independent Telephone Companies

al copy of the microfiche set is $357 and the cost of a steel construction, high resolution fiche reader is $200 (assuming a state discount for volume purchase). The costs to expand access to CAVALIR are as follows:

Cost for additional libraries:

Fiche sets:	$ 649,740
Fiche readers:	$ 364,000
	$ 1,013,740

Total annual cost for all libraries: $ 752,556

One alternative to this form of access to CAVALIR, and one that should be investigated in more detail, is the production and distribution of CAVALIR on compact laser disk. At the time of writing, the cost to produce the master disk, from which other disks are pressed, is a maximum of $0.35 per title (discounts are available for bulk orders or databases in excess of 1 million titles). The CAVALIR database currently contains approximately 1.9 million unique titles.

The costs to master CAVALIR on laser disk: $66,500 p.a.

The costs to reproduce the disks are minimal. Even if we were to use a rather high cost estimate of $5.00 per disk, the total cost to produce 2,108 copies would be approximately $42,460. Thus, the total annual cost to produce CAVALIR on compact laser disk is $108,960.

In order that libraries can retrieve the information needed from CAVALIR they need an IBM PC or other appropriate microcomputer, a disk controller or interface, and a disk player. This configuration costs of the order of magnitude of $3,000. Thus, the total cost to provide such equipment in all the libraries is $6,324,000. This cost appears to be very high. However, given the significantly lower cost of CAVALIR production, the laser disk approach becomes cost-effective after five years or so. Further, the IBM PCs can be used for a multitude of other functions such as electronic mail, word processing, accounting, and even circulation and inventory control in small libraries.

7.4.2 Expand Online Access to CAVALIR

The costs to expand online access to CAVALIR include the costs of terminals and modems at each library, plus telecommunications. The approximate costs are as follows:

Cost per terminal:	$ 500
Cost per modem:	$ 295
Terminals for libraries without them:	$ 1,560,585

Communications costs would vary according to the amount of time online and distance from the database.

7.4.3 Expand Contents of the Virginia Database

The current version of the Virginia database contains approximately 2 million unique titles. The survey indicated approximately 23.8 million titles are held by Virginia libraries (although the respondents represented only 69% of all Virginia libraries). Assuming a low title overlap of 30 percent, as encountered in other states, the estimated number of unique titles in the state is 17 million. The average cost of conversion is $2.00 per title record at the low end of the scale and can cost considerably more. At the low end, conversion costs would be $35 million for a full-scale retrospective conversion effort.

7.4.4 Provide Electronic ILL Mechanism

In this activity it is anticipated that each library would have a terminal to access the electronic messaging system. Thus, the costs would be the same as for online access to CAVALIR although service fees or software charges could also be incurred.

7.4.5 Expand Automation to Support Circulation for Libraries in Virginia

Libraries in Virginia currently circulate approximately 54.4 million items per year. The cost to automate this massive circulation operation is dependent upon a number of factors, including the number of items circulated, the number of libraries, and the number of circulation points in each library. A rough estimate of the number of circulation terminals that would be required is 2,640 (assuming 1 terminal for every 120,000 items circulated per year per library). Approximate costs to automate circulation are approximately $12 million, plus $11 million per year (the bulk of which is telecommunications costs). These estimates exclude the costs to develop the database and to bar code the collection, but do include hardware, software, staffing, training, communications, and installation costs. The costs were developed for a totally centralized system using commercially available services. These costs can be broken down as follows:

	One-time Costs ($)	Annual Recurring Costs ($)
Computer Equipment	6,326,460	1,028,736
Communications Equipment	4,730,200	391,680
Other Equipment	21,950	2,664
Software	245,000	29,400
Telecommunications	175,763	9,348,180
Training	121,149	241,087
Staffing	----	90,390
Installation	103,494	1,380
TOTAL	11,724,016	11,133,517

7.4.6 Expand Automation to Support Online Public Access Catalogs

The costs to expand the automated system(s) to handle online public access catalogs is dependent on the expected number of terminals to be used. We have found, empirically, that approximately 4 public access catalog searches are performed per item circulated. Thus, in Virginia we anticipate 217.6 million catalog searches annually. Evidence indicates that approximately 5 online public access catalog terminals are required for each 120,000 circulations. In Virginia we estimate that approximately 13,200 terminals would be required. The minimum cost to upgrade the system(s) would be $1,000 per terminal, plus additional processor capacity in the form of additional processor(s), additional internal memory, additional disk storage, etc. It is our estimate that these upgrade costs would fall between $15 million and $30 million.

7.5 Operational Assessment

This assessment is concerned with the effect of automation and networking configurations on the day-to-day operation of participating libraries. To a large degree, the actual physical configuration of the network does not affect the daily routine of the library. However, in looking for needed materials held by libraries within the state, the extent to which librarians will have to perform single or multiple searches is dependent on the configuration of the network. A centralized configuration (wherever the node is located) will involve one single search if a unified database is available, or if software can automatically expand a search from one partition to others in partitioned databases. With a distributed system, multiple searches have to be performed unless, as before, software is available within the network to automatically route a search through the network.

More relevant to day-to-day operations are the procedures, protocols, and standards that may be implemented as part of the automation and networking activities. Thus, a library which traditionally has communicated requests for materials directly to another library may find that in the emerging network design, the library is in a different region. It is not our intent to recommend that such a transaction across regional (or other) boundaries should (or, indeed must) not take place. Rather we prefer to consider that should such a transaction occur, it would not be considered a network transaction, and the benefits of participation in a more formal network would not be derived. For example, such a loan transaction might not be compensated for out of network funds, or performance standards may not be met, or a network delivery service may not be used, etc. In other words, the network should be its own promoter and not be imposed on librarians as the only system(s) or service(s) that can be used.

Overall, in designing automation and networking activities, care will be taken to demonstrate the benefits of network participation. Thus, it is anticipated that librarians will be able to provide more efficient and effective services. The improvements in performance which should accrue from network participation include the ability to produce or process more units or transactions (such as to catalog more materials or handle increased circulation, etc.); the ability to produce better quality outputs or work processes (such as more accurate cataloging or more relevant searching); and the ability to provide more timely services (such as the automated production of overdue notices, or improved ILL and reserve turnaround times, etc.).

In conclusion, the exact configuration selected for a more formal library network in Virginia does not impinge greatly on the daily operation of the library in terms of what things are done; only in terms of how things are done and how much there is to do. This is especially so as more sophisticated interfaces are developed.

7.6 Political Assessment

The political feasibility of alternative configurations was conducted from the perspectives of various categories of participants. It was based largely on the opinions and concerns expressed by librarians and others during the course of Phase I.

One major political concern that emerged several times during the study was the type-of-library approach versus the regional approach to networking. Academic libraries leaned towards a type-of-library approach organized hierarchically with the academic libraries acting as "last resort" for other types of libraries. All other types of libraries preferred the regional approach. These opinions might suggest a combination approach whereby academic libraries link together as a network component, which in turn links to a series of regional components comprising all other types of libraries.

However, further probing into the underlying reasons for favoring the type-of-library approach revealed that a major concern was of increasing demands and workloads for academic libraries without equivalent compensation. Certainly it is true that easy access to information about libraries' holdings will increase demand for those holdings. In some consortia, membership has increased interlibrary loan activity (both borrowing and lending) by over 100 percent. Furthermore, there are substantial costs associated with such transactions. However, if some form of compensation were to be built into the networking plan, the fears of overload would be alleviated to a large degree. In such a situation, academic libraries would be more willing to join in regional consortia.

Another political issue relates to membership in out-of-state networks, and again the academic librarians and the special librarians expressed concern. The various configurations are largely independent of this issue. However, libraries that currently participate in national and multi-state library networks do not wish their participation to cease. In fact, it would not only be detrimental to these libraries to withdraw from such activities, but detrimental to other libraries in the state also. Thus, to make any of the configurations politically acceptable, participation in other networks must be allowed to continue.

The extent of participation in networking activities was of concern politically to the smaller libraries. To be acceptable, the configuration must allow participation of all types and sizes of libraries. It must also allow libraries which are not automated to participate.

Finally, there are some library functions which can benefit from cooperative activities and others which are best left at the local level. The decision as to which belong where is one that has to be made by individual libraries according to their own needs and requirements. Thus, some functions and services could be provided through one configuration, and others through another. For example, shared cataloging becomes more cost-effective as the likely "hit rate" in a shared system increases. Thus, a shared cataloging service at the state level would benefit many libraries.

Other libraries would benefit more from sharing at the national level. On the other hand, the sharing of an automated system to support circulation control and a public access catalog might be more appropriately implemented at the regional or local level. In view of the input from librarians in Virginia, we would recommend a mixed approach to networking which can be justified on a service-by-service basis to funding bodies.

SECTION 8

RECOMMENDATIONS FOR IMPROVING THE CURRENT LIBRARY NETWORKING CONFIGURATION IN VIRGINIA

8.1 Is a More Formal Networking Configuration Required?

After a thorough analysis of data gathered and of library trends in general, we determined that a more formal networking configuration is required in Virginia. Important factors entering into this determination included:

- the almost overwhelming need and desire to move to a more formal configuration on the part of librarians in Virginia as determined through the Survey of Virginia Libraries, the regional hearings and interviews;

- the fact that a considerable amount of networking is already performed in Virginia, although largely on an informal basis;

- the substantial investment that has already been made by Virginia libraries and funding agencies in automation and networking, the return on which will only be fully achieved by maximizing the use of machine-readable files and automated systems;

- the current status of library automation in general, and the perceived need of librarians in Virginia to take advantage of some of the newer technologies that are emerging, e.g., compact laser disks;

- the fact that formalizing library networking can help to ensure better levels of performance and effectiveness to patrons;

- the current planning for a unified digital telecommunications system to extend throughout the state, and the early consideration of libraries as potential heavy-duty users of such a network.

8.2 How Could a More Formal Network be Developed in the State?

As mentioned earlier in this report, there are many different ways in which library networking in Virginia could be formalized including:

- develop legislation;
- establish a network organization;
- develop membership criteria;
- design procedures and protocols for interaction;
- develop equalization/compensation schemes;
- adopt standards of performance;
- adopt/expand automation:
    - expand access to CAVALIR on fiche or laser disk;
    - provide expanded online access to CAVALIR;
    - expand the Virginia database to include other libraries' holdings;
    - provide an electronic messaging system for ILL and other communications;
    - expand automated systems to support circulation control for libraries in Virginia;
    - expand automated systems to support online public access catalogs for libraries in Virginia;
    - interconnect automated systems.

Each of the formalizing mechanisms identified above requires a considerable investment in planning, design, and implementation which will be detailed in the Phase II plan. Other details to be developed include options for specific systems and services to be adopted, the functions the network will support, the sequencing and scheduling of implementation activities, the roles and responsibilities for network development, network structure, governance, and funding. Finally, the costs and benefits of network development, operation and participation need to be determined in sufficient detail to enable individual library managers and funding bodies to decide whether or not to participate, and at what level.

8.3 What are the Implications of Developing a More Formal Network in Virginia?

There are a number of important implications associated with the development of a more formal library network in Virginia including:

- Patrons will gain access to a wider range of library resources statewide.
- The performance and effectiveness of Virginia libraries should improve.
- There should be benefits to participating libraries either in terms of cost savings or in terms of improved performance.
- Participation in the network will increase communications among librarians throughout the state, thereby keeping librarians abreast of relevant events and developments.
- Use of the network will increase demand for network services, which in turn will increase the demand on individual libraries.
- There will be costs associated not only with planning, developing, and operating the network, but also with using it.
- The Commonwealth of Virginia will become more self-sufficient in terms of meeting the library and information needs of its residents and will derive a greater return on the investment in library services.
- The more formal configuration cannot be implemented overnight, and an ongoing effort on the part of all those involved will be required.

In Phase II of this study, the implications (both positive and negative) will be carefully mapped out to ensure the most appropriate network development process which will optimize benefits while minimizing costs.

BIBLIOGRAPHY

1. Barbour, Wendall A., et al. "Summary of Recommendations." Material prepared by a subcommittee of technical services librarians and submitted to the Chairman, Library Advisory Committee, State Council for Higher Education in Virginia. May 24, 1985.

2. The Computer Company. Integrated Library Network System for the Commonwealth of Virginia. Richmond, [1978].

3. DeGennaro, Richard, "Library Automation and Networking Perspectives on Three Decades." Library Journal, April 1, 1983. pp. 629-635.

4. Evans, Glyn T. "Networking in 1984." The Bowker Annual of Library and Book Trade Information. 30th edition. New York, Bowker, 1985.

5. Fullerton, Richard F., et al. Tidewater Library Network Study, Final Report. Allison Park, PA; Alexandria, VA, Synectics Corporation, 1978.

6. Information Systems Consultants, Inc. State and Commercial Bibliographic Activities and Their Effect on the Bibliographic Utilities. 1983.

7. Johnson, Richardia S., Vinod Chachra, Dean Burgess. Issue Papers Prepared for the Commission Studying a State Library Networking System. Richmond, 1982.

8. Kent, Allen and Galvin, Thomas J., editors. The Structure and Governance of Library Networks. New York, Dekker, 1979.

9. LeStourgeon, Martha, et al. "Impact of Networking on Academic Libraries." Material prepared by a subcommittee and submitted to the Chairman, Library Advisory Committee, State Council for Higher Education in Virginia. June 4, 1985.

10. Markuson, Barbara Evans and Woolls, Blanche, editors. Networks for Networkers: Critical Issues in Cooperative Library Development. New York, Neal-Schuman, 1980.

11. National Commission on Libraries and Information Science. Toward a National Program for Library and Information Services: Goals for Action. Washington, GPO, 1975.

12. "Networking Concerns." Virginia Chapter, Special Libraries Association. [Richmond, 1985].

13. "Networks in Education." Education Libraries, Volume 7, Numbers 1-2. Spring-Summer, 1982. pp. 3-38.

14. Ober, Constance E. An Overview of Satellite Technology and Costs. Virginia Department of Information Technology. May 1985.

15. Ober, Constance E. *Virginia Telecommunications Systems for Administrative Uses and Educational Delivery*. Virginia Department of Information Technology. May 1985.

16. Rogers, JoAnn V. "Networking: Selected Research Studies, 1979-83." *Library and Information Science Research*, Volume 6, Number 2. April-June 1984. pp. 111-133.

17. Council of Higher Education in Virginia, Library Advisory Committee. "Recommendations for Consultant." Richmond, March 1984.

18. Council of Higher Education in Virginia, Library Advisory Committee. *Virginia Plan for Academic Library Cooperation*. Richmond, 1977; revised 1983.

19. State Networking Users Advisory Council. *Principles and Goals for a Virginia Library Network*. Richmond, March 1984.

20. Task Force on the Role of the School Library Media Program in the National Program. *The Role of the School Library Media Program in Networking*. Washington, DC, National Commission on Libraries and Information Science, 1978.

21. Trezza, Alphonse F. "Networks." *ALA Yearbook of Library and Information Services; a Review of Library Events in 1983*. Volume 9. Chicago, American Library Association, 1984, pp. 215-217.

22. Turock, Betty J. "Organization Factors in Multitype Library Networking." *Library and Information Science Research*, Volume 6, Number 4. October-December, 1984. pp. 349-381.

23. Virginia. General Assembly. House of Delegates. House Bill No. 430. Richmond, 1983.

24. Virginia. General Assembly. House of Delegates. House Joint Resolution No. 239. Richmond, 1981.

25. Virginia State Library. *Governor's Economic Development Project-Proposal for a Statewide Library Network*. Richmond, [1983].

26. Virginia State Library. *Library Automation in Virginia, Proceedings of the Meeting of the Statewide Discussion Group*. Richmond, 1980.

27. Virginia State Library. *An Overview of Library Networking in Virginia*. Richmond, 1981.

28. Virginia State Library. *An Overview of Library Networking in Virginia, 1981-82 Supplement*. Richmond, 1982; revised 1985.

29. Virginia State Library. *Statistics of Virginia Public Libraries and Institutional Libraries, 1982-83*. Richmond, 1984.

APPENDIX A

STATE BY STATE ANALYSIS OF LIBRARY NETWORKING ACTIVITIES

LIST OF STATES

Section		Page
A.1	Alabama	A-1
A.2	Alaska	A-2
A.3	Arizona	A-3
A.4	Arkansas	A-5
A.5	California	A-6
A.6	Colorado	A-7
A.7	Connecticut	A-10
A.8	Delaware	A-11
A.9	Florida	A-12
A.10	Georgia	A-14
A.11	Hawaii	A-15
A.12	Idaho	A-16
A.13	Illinois	A-17
A.14	Indiana	A-18
A.15	Iowa	A-19
A.16	Kansas	A-21
A.17	Kentucky	A-22
A.18	Louisiana	A-23
A.19	Maine	A-24
A.20	Maryland	A-25
A.21	Massachusetts	A-26
A.22	Michigan	A-27
A.23	Minnesota	A-28
A.24	Mississippi	A-29
A.25	Missouri	A-30

LIST OF STATES (CONTINUED)

Section		Page
A.26	Montana	A-31
A.27	Nevada	A-32
A.28	New Hampshire	A-34
A.29	New Mexico	A-35
A.30	New York	A-35
A.31	North Carolina	A-38
A.32	North Dakota	A-40
A.33	Ohio	A-41
A.34	Oklahoma	A-42
A.35	Oregon	A-43
A.36	Pennsylvania	A-44
A.37	Rhode Island	A-46
A.38	South Carolina	A-46
A.39	South Dakota	A-48
A.40	Tennessee	A-49
A.41	Texas	A-50
A.42	Utah	A-52
A.43	Vermont	A-53
A.44	Washington	A-54
A.45	West Virginia	A-56
A.46	Wisconsin	A-57
A.47	Wyoming	A-59

A.1 Alabama

Alabama has contracted with an outside consultant to develop a plan for resource sharing and automation for all libraries in the state. The goal is for residents to have access to all materials in the state, regardless of location. Recommendations are to include specifications for local automated systems and for linking systems. Three nodes are already in place in Montgomery, Birmingham-Jefferson County and Northeast Alabama. Using LSCA money, these areas have installed shared circulation systems. Two regional libraries are undergoing retrospective conversion, using ALICAT (Alabama Interlibrary Catalog), the state's COM catalog. These regions will create their own individual COM union lists.

Two multitype systems were established in 1981 as three year LSCA Title III funded pilot projects. Although both were judged successful, resulting in improved interlibrary access and resource sharing, only the Alabama Library Exchange remains fully operational. The evaluation (performed by the University of South Carolina) recommended expanding multitype systems to other parts of the state. APLS is looking for state funding in the next few years. One new system will be starting up in October, 1985.

The Alabama Public Library Services (i.e., the State Library agency referred to as APLS) operates the Alabama Library Information Network (ALIN) to facilitate decentralized resource sharing and ILL. Eight regional public libraries serve as reference and interlibrary loan (RILL) service centers. The state funds the professional staff in the RILL centers and also maintains two statewide resource centers as backup: APLS and the Birmingham Public Library. Birmingham Public is awarded a flat grant of $30,000 plus a per item transaction fee and money to cover a professional librarian's time for online searching. Other lending institutions are not reimbursed.

The ALIN structure is hierarchical, with local public libraries routing requests to the regional public library headquarters (some of which are RILLs), other RILL centers or APLS. Academic and special libraries with ALICAT can contact libraries directly or go through the network. Displaying holdings for 84 public, college and university libraries, ALICAT has grown to 1,181,025 titles and 1,984,642 holdings. Though created initially from SOLINET tapes, the database is routinely updated with full MARC records from Brodart, Baker and Taylor, Infomatics, and Auto-Graphics. The state provides one copy to all regional headquarters and participating libraries and will provide additional copies for a fee.

APLS has automated its internal procedures with a Honeywell mini-computer supporting office automation functions and providing access to the State Data Center's IBM computer which supports circulation functions for the Blind and Physically Handicapped. APLS also has access to the Montgomery City/County shared CLSI system. Since there are many CLSI systems in the state, part of the automation study will consider linking all CLSI systems. APLS uses SOLINET for acquisitions, cataloging and ILL. The mail is used for ILL. No libraries use facsimile.

A.2 Alaska

Alaska is divided into three regions for resource sharing -- the South Central, Southeast and Northern regions. Each has a coordinator, with the Southeast region coordinated by the State Library, a Regional Resource Center and a Regional Research Library providing second and third level services within each region, with the public libraries providing initial resources. The Regional Research Library is the administering library. The regionals provide the following services: ILL, cooperative circulation control, regional audio-visual service, physical processing of books, and regional lists.

Access to the statewide database is provided by the Alaska Library Network COM catalog, which is updated annually with quarterly supplements. All libraries within the state are members of WLN and receive copies of the fiche catalog. When the database was initially created over five years ago, there were guidelines for retrospective conversion to avoid duplication of records and to ensure the inclusion of unique titles. The state supplied fiche viewers to some of the libraries.

ILL requests are sent via the mail, electronic mail or the state's communications network, operated by the Department of Public Works and tying together the Resource Centers and Research Libraries. There are local van services in the metropolitan areas. Telefacsimile is used mostly during legislative sessions to deliver requests and articles.

In addition to the statewide COM, the Capital City's Catalog (updated quarterly) is distributed to all libraries in the state. Within Juneau there are reciprocal borrowing privileges for all libraries.

Current planning includes the coordination of circulation systems, which to date are for individual libraries only. The Long Range Program for Library Development (1984-88) includes the continued development of regional service patterns, access to outside ILL services (up to 6,000 total requests), access to computerized databases, and interlibrary telecommunications. The Plan was created by the Alaska State Library and the Governor's Advisory Council on Libraries, a cooperative agency comprised of all types of libraries throughout the state.

A.3 Arizona

Arizona is moving towards establishing closed networks within the existing county systems rather than inter-county regional networks. The State Library estimates a 40 percent reduction in ILL costs by using intracounty libraries rather than broader-based regional libraries to fulfill ILL demands. Requests that cannot be met within the county system are channeled to the Arizona Interlibrary Loan Center, which has been the primary resource library for all types of libraries since 1984. The ILL Center is maintained by the state Library through a contract with Phoenix Public Library. With the new center the state had established strict guidelines and maintained statistics to prevent mis-use of the system. The redesigned contract with Phoenix Public is based on number of units and unit costs. Last year the state purchased 22,000 units at $8.20 per unit for libraries (using OCLC, the de facto base for ILL). The cost per unit drops to $7.10 after 22,000. The only way libraries can receive additional reimbursement is to show demand for additional units or if the unit cost rises. The state is seeking to maintain ILL costs at the present $240,000. Since the metropolitan libraries have access to OCLC, the Center is needed mainly by the rural counties.

Since the ILL Center is funded 60 percent by LSCA Title I money (and $50,000 in state aid), 40 percent of the requests can be from anyone in the state (with 60 percent meeting public library demands). The State Library plans to be off LSCA funding within three years.

The state also supports the regional Arizona Reference Information Center at the Tucson Public Library. The Reference Center, supported by LSCA Title I grants, is available to public libraries only. Access is provided to DIALOG, the University of Arizona medical database, Arizona State databases and special libraries databases (e.g., Honeywell, Motorola, Amdahl). The Center is currently funded at $92,000 but the state expects to increase that allotment as use of the Center increases.

The Arizona Numeric Register (ANR) is still distributed quarterly to rural libraries but it is somewhat outdated (i.e., an estimated 20 percent of the holdings are no longer in the database). Although the State assumed the ILL Center would eliminate the need for the ANR, some libraries still prefer to do their own look-up and the ANR provides valuable access to unique or rare titles not in OCLC. Approximately $16,000 is spent annually on maintenance and production.

Sixteen of the major libraries are on OCLC. Four libraries in the state are on RLIN. One county is using WLN.

The state has funded SOLAR, a serials bibliographic database for three years. The initial funding came from Arizona State University (ASU) which sold the service to the Phoenix, Mesa, and Tempe public libraries. There is currently over $100,000 in LSCA Title III grant money used to support SOLAR, but it is expected to become self-sufficient.

An $8,000 telefacsimile project is underway at Tucson Public. A Tucson-Phoenix communications link may become feasible.

The state uses the CLASS electronic mail system periodically.

After analyzing the ILL and Reference Center's operations for another two years and working on making the county systems as self-sufficient as possible, the State Library will be in a better position to put together an extensive automation plan. A contract is out to several of the larger institutions for an automation consultant at the State Library.

A.4 Arkansas

There are five library development districts linking public libraries in the state. Via the Arkansas Reference and Interlibrary Loan Network, public libraries have toll-free access to the State Library's collection. A skeletal networking study was conducted in 1981, but the only major networking project has been production of the Arkansas Union Catalog of monographs which is updated every 2-3 years with annual or biannual supplements produced between cumulations. OCLC records are sent to the ACOM vendor from individual libraries using AMIGOS and those libraries using the central processing facilities of the State Library. There are currently over 1,000,000 titles in the COM database. The state has considered automating but does not want to deny access to the database to the smaller libraries. The State Library is currently investigating the automation of its documents and monographs.

Title I and III LSCA grants have been used to acquire IBM-XTs for school academic and public libraries and the State Library to foster computer literacy throughout the state. The state is considering writing software for distribution to the libraries.

The state has brokered through AMIGOS to use components of the ALANET electronic mail service (mailbox, newsletter, calendar, and bulletin board only). The ALANET can be used to transmit reference questions but not for ILL at the present time. The state pays the initiation fee and about three hours/month of online usage for 42 libraries (tied into five access points via Telenet or Tymnet).

There is no reimbursement for ILL. The mail is used for ILL except for a local courier service within Little Rock.

A.5 California

There are fifteen regional public library systems in the state of California. Many of the regions have cooperative multitype networks, funded initially by LSCA Title I and III grants. As federal money was gradually withdrawn, however, many networks died. Those networks in rural areas, where cooperation is necesssary for survival, have been more successful. Some networks do have a modest membership fee. Networks typically provide ILL and resource sharing and training events. Some generate local directories for reference services. The Total Interlibrary Exchange (TIE) in the Ventura area is an example of a public library/ university library cooperative effort. Currently Networks have no formal standing in the state. The entire issue of networking is going to be explored at a State Networking Conference in September 1985.

The University of California has a packet-switching statewide network using the MELVYL integrated catalog system. The State Library is mounting the monographs database into OCLC for access via OCLC and eventual dial-up for non-OCLC members. This statewide database of public library current acquisitions, CATALIST, was produced on microfiche in the past. LSCA money was used to upgrade and load large retrospective files on a selected basis, but the ongoing CATALIST has only current acquisitions (1980 and later). MARC records were accepted from RLIN, OCLC, Auto-Graphics and Brodart and libraries were paid per title to input records. The state is now using that money to pay for OCLC membership fees and first-time-use (FTU) charges. The local libraries must pay line and access charges.

There are two large serials lists -- CULP (public libraries) and the California Academic List of Serials, mounted on MELVYL and available as a fiche product.

The libraries participate in ONTYME, the electronic mail service administered by CLASS. Teletypes are no longer used.

The North and South regions have regional document delivery systems connecting the 15 public library systems. However, the vans will stop at other types of libraries. The state will reimburse public libraries for the incremental handling costs.

The University of California and the State Library each have automation plans, but there is no statewide plan. The State Library feels it is way behind in networking and automation because so many of the major stakeholders are working independently. The September networking conference may provide additional direction.

A.6 Colorado

In 1981, a Network Development Committee was established to advise the Colorado State Board of Education on the development of an automated library network. The committee was responsible for determining what the network would be, how it would be developed, how it would operate and expand, and how it would be financed. The Final Report of the Colorado Library Network Development Committee was accepted by the Colorado Board of Education in April 1984 and many of the recommendations are currently being implemented.

The planned Colorado Library Network is a statewide interlibrary automated communications facility based on the IRVING Communications Network, expected to be operational after January 1986. The planned IRVING services include the ability of one agency to access the host computer of another agency and request bibliographic and/or patron information, to determine availability of an item, and to request the loan. The Colorado

Library Network will include existing host systems and Network Nodal Processors (NNPs) added to regions that do not have automated systems. Libraries in these regions can access the NNP via micros at the cost of a local phone call.

Library service agencies must formally agree to standards relating to adherence to communications standards, service, fees, database maintenance, access to its database, controls, and training.

The plan recommends the formation of a Network Implementation Council (NIC) to advise the State Library on planning, implementing and operating the Network. The initial composition recommended included representatives from 11 types of institutions: CARL libraries (CARL is a computerized public access catalog of several major research library colletions); IRVING libraries (Aurora, Boulder, Denver and Jefferson Co.); other automated libraries; school libraries; Western Slope libraries; special libraries; the Regional Library Service System (RLSS); a nonhost academic library; a nonhost public library; a non-CARL academic library; and a non-IRVING public library. The first task of the NIC will be the creation of a permanent network office under the State Library.

The plan includes standards and guidelines for use by library service agencies. Standards are defined as technical requirements that must be met for a user to interface with the network communications system. Standards include: terminate with the full ASCII character set; LCCN, ISBN/ISSN or a unique record identifier; search access points (author, title, LCCN, subject); bar codes; dial-up access (300 or 1200 baud); asynchronous communication; and independent dial-up terminal access. Guidelines are defined as recommendations or advice. Examples are CRT terminals with 80 character lines across and 24 lines displayed; micros with minimal 64K memory; and additional search capabilities.

Current operational networking projects funded by the state include:

- Colorado Alliance of Research Libraries (CARL) - a computerized circulation system and public access catalog of five major reseach libraries. (Partially funded with LSCA funds.)

- Colorado Union Catalog (CUC) - a database of 2,306,000 books owned by 150 libraries, used to produce the microfiche catalog and to provide data for the statewide network. (Totally funded with LSCA funds.)

- OCLC Retrospective Conversion - (Retrocon) - LSCA funds were used to complete 8 retrospective conversion projects via OCLC. (OCLC records form the basis of the CUC database.)

Developmental networking projects include:

- Arkansas Valley RLSS/Southwest RLSS Network Node - establishing nodes for the two rural RLSS's testing the use of micros as local and regional nodes.

- Central Colorado RLSS Round Robin and Union List of Serials. Round Robin is an intra-system communications network using Apple PCs for ILL and is a potential regional node.

- IRVING - the research and development project linking the CLSI and Sperry circulation systems of Aurora, Boulder, Denver and Jefferson Co., the four largest public libraries in the metropolitan Denver area.

- Pathfinder RLSS Network Node - BOOKPATH, a microcomputer-based ILL system.

- Pathfinder RLSS CARL Access - allowing selected libraries to search the CARL PAC.

- Pueblo Library Network - installing lines, modems and terminals in the public library and two colleges.

- Southwest RLSS/Three Rivers RLSS OCLC Database - a micro at each system office allows access to the four character OCLC symbol of each owning library.

- Western Colorado Union List of Serials for many public, academic and school libraries.

- Denver Research Institute - telecommunications project using state microwave.

The State Library expects the automated network to be fully operational in two years.

To look at networking at the broader level of cooperation among libraries, the state is organized into seven multitype cooperative regional library support systems, RLSS, which receive over $1,000,000 annually in state aid. The state has supplied the RLSSs, as well as the two resource libraries (Denver Public and the University of Colorado at Boulder), with Apple microcomputers and modems and pays for Easy Link. Easy Link is currently used for ILL and reference questions. The state is initiating an electronic mail service, offering a jobline, continuing education opportunities, and additional services.

The state assumes all coordination for ILL. There is a net lender reimbursement program (approximately $115,000/year). The Denver Public Library receives a grant for ILL and reference support ($328,000 in the 1985 fiscal year). There is a reciprocal borrowing program, with the town library and regional library splitting the cost of the loan (currently about $0.55/loan). The state also assumes cost for libraries to join BCR, the Bibliographical Center for Research.

A.7 Connecticut

Networking in the state of Connecticut revolves around the six independent Cooperating Library Service Units (CLSUs), comprised of all types of libraries. Each CLSU is incorporated as a nonprofit organization, has bylaws, and is governed by a Board representative of all types of libraries, which sets policy and distributes funds. The current state budget allocates $750,000 for the promotion of interlibrary cooperation (compared with $400,000 - $450,000 in the past). Each CLSU may secure additional local funding and may charge a membership fee. The CLSU Board is required to submit to the State Library a policy statement of goals and objectives for the current grant year, as well as a three year development plan.

At the state level, the Cooperating Library Service Union Review Board governs the CLSUs and is comprised of 15 members, representing public, academic, school and special libraries. The Board has statutory authority. The Review Board reports annually to the State Library Board and the General Assembly's Joint Standing Committee on Education.

The state has given many grants for retrospective conversion. Most of the regions have installed shared circulation systems and the state is currently testing cooperative, planned collection building.

The six CLSUs are connected to the State Library's Interlibrary Loan Center via a closed circuit teletype network which also includes five academic libraries. Libraries throughout the state have the option of going to the regional ILL Center or to the state's ILL Center. If the ILL Center cannot fill the request via one of the 11 libraries on the network, OCLC is used. In addition to the 12 primary libraries, over 50 other academic and public libraries are linked via teletype.

The state reimburses any library which loans materials on a per loan basis (determined by the total number of loans reported and total monies available). To be eligible, a library must agree to have its holdings accessible via OCLC, the Connecticut Union List of Holdings, or another database serviceable by the State Library.

The state also funds Connecticard, a system which allows a user access to any public library in the state. Libraries are reimbursed on a net basis (about $0.50/transaction).

The state is in the process of putting together an organizational plan for a $4,500,000 automation project. They are currently experimenting with electronic mail. Connecticut is a member of COSLINE, joining with the five New England and Mid-Atlantic states for joint planning and automation projects.

A.8 Delaware

The networking system within Delaware is comprised of 125 multi-type libraries grouped along county lines into three networks (New Castle, Sussex and Kent). Responsibilities include (1) communication among different types of libraries; (2) ILL (within and between networks) and delivery of materials; and (3) retrospective conversion. Participation in each network is voluntary. Minimal membership fees ($5 - $10) cover costs of the annual meeting and a newsletter. Members elect a president and executive board for each region. Members of the networks are appointed to the state's Advisory Council.

The state reimburses net lenders with Title III money and pays all fees for out of state ILL. The state provides the connecting delivery system statewide. The cap for retrospective conversion is $0.75/title. Current conversion projects utilize OCLC and Brodart.

The statewide COM catalog, produced annually with a semi-annual supplement, facilitates resource sharing. Recommendations from the August 1983 study "Automation and Resource Sharing for the Libraries of Delaware" recommended the continuation of the COM catalog through 1988, with ILL based on the COM holdings. Since most libraries lack the budget support for automation, there are no plans to automate statewide. The University of Delaware is currently selecting an integrated library system. Since the State Library contains only 35,000 titles, there are no current plans to automate.

A.9 Florida

A number of programs and networks currently exist within the State of Florida to promote resource sharing and other cooperative activities among Florida libraries. Two programs, COMCAT (Computer-Output-Microfiche Catalog of Florida Library Holdings) and FLIN (Florida Library Information Network), were developed under the initiative and funding support of the State Library, using state and federal funds. The COMCAT project was begun in 1975 to provide a union catalog of the holdings of the largest academic and public libraries in the state. Currently, the fiche are issued annually and contain over 2,500,000 titles held by the 24 participating libraries. COMCAT is produced from annual OCLC archive tapes purchased from SOLINET by the State Library. The COMCAT records contain brief bibliographic information since COMCAT is not intended to be a source of cataloging data. The fiche are distributed to the COMCAT participants; other libraries may purchase the fiche from the State Library. Provision of online access to COMCAT data is under discussion.

The FLIN program, headquartered at the State Library, provides interlibrary loan service or referral to more than 500 libraries in Florida. Requests which cannot be filled from the State Library's collection are referred to the appropriate FLIN participants. The 24 libraries which contribute holdings to COMCAT are FLIN participants. Requests for scholarly research materials are sent by courier to Florida State University (FSU) which receives a special Library Services and Construction Act (LSCA) Title III grant to supply requested items and photocopies. Requests for non-scholarly materials are referred via closed-circuit teletype to four of the large public libraries which are designated FLIN resource center libraries.

Any requests which cannot be filled by the State Library, the resource center libraries, or FSU are searched on OCLC by State Library staff and are referred to the other public and academic libraries in FLIN, other Florida libraries, or to out-of-state libraries, as required. These requests are placed online using the OCLC ILL subsystem.

In the last several years, procedures and protocols have been developed to begin to decentralize FLIN. State Library staff were becoming overburdened with the volume of requests received for processing. Since all FLIN libraries are OCLC participants, they may use the ILL subsystem to request materials directly from each other. Florida libraries which are not designated FLIN participants are encouraged to send their requests for materials to the State Library.

One recent networking development was the creation of the Florida Center for Library Automation (FCLA) by the State Legislature during the 1984 Spring Session. FCLA initially will support automation of library functions at the nine institutions of the State University System (SUS). The Center is mandated to offer, in the future, automated library services to all types of libraries in the state. The legislation also mandates that the Center use the SUS regional data centers and the Florida Department of Education's state-of-the-art telecommunications network , FIRN (Florida Information Resource Network), to support library automation and resource sharing. FCLA has been in operation for less than one year; it will be 3-5 years before it can begin to offer services to non-SUS libraries.

A number of state, regional and local organizations/associations support other formal and/or informal cooperative activities among Florida libraries. Communications between/among participants usually are achieved by telephone calls, mail and personal contact. Some of the networks provide courier/shuttle services for materials delivery. Newer technologies for communication include telefacsimile transmission of requests and short documents, which is currently being implemented in one regional network, and electronic mail and/or electronic bulletin board systems which are in use/under consideration in several networks.

A statewide network plan is under development. The contractor is currently working with the State Library and the Advisory Committee on Networking to develop a detailed plan for multitype library networking.

A.10 Georgia

Cooperation among public, academic and special libraries is facilitated by the 195-member Georgia Library Information Network (GLIN), comprised of 50 public (36 multi-branch and 14 single), 62 academic, and 83 special libraries. School libraries participate indirectly through the public libraries. Libraries joining the network agree to lend as well as borrow, not charge for materials, and abide by the ILL code. Currently the State Library contracts with 21 Resource Center libraries to fill ILL requests. (Most are academic or special, with only three public libraries.) The state reimburses the Resource Centers based on semi-annual statistics. The state is seeking to reduce the present dependency on the State Library, which acts as a hub. Over the next 2-5 years they plan to build in protocols which will more equally distribute the load.

Access to the State Library's holdings is provided by a COM catalog, supplied at no cost to all GLIN members. The state also provided COM readers to the member libraries. The state recently completed retrospective conversion via SOLINET/OCLC and has just signed a contract with SIRSI for a circulation control system. Libraries throughout the state will have access via microcomputers and telephone lines.

The state has experimented with IBM PCs to send transmissions to two public libraries. It uses a PC for the Baker and Taylor acquisitions system and a Wang PC for word processing.

Since SOLINET (the Southeastern Library Network) is a major influence in the state, it is likely that any automation plan will include SOLINET. The State Library met with SOLINET in June to discuss a statewide database and is also currently talking to the Regents Committee. The state has not yet formulated a plan. An automation position at the State Library is awaiting approval.

A.11 Hawaii

All public, academic and public school libraries are operated by the Department of Education. Currently 19 public libraries are hooked up to the ULISYS circulation system for ILL, inventory control, bibliographic searching, reserve placement, and electronic messaging. The State Library System uses the BIBLIOS Hawaii batch order system for processing orders for 48 public and 231 public school libraries. MARC FICHE is used to obtain cataloging data for the public and school libraries.

A retrospective conversion project was initiated in 1978 by Blackwell/North America and completed in-house by the state to support the statewide database used to produce the COM catalog.

Since all libraries are run by the state, there is no reimbursement required. Except for the island of Oahu, where government and public libraries use a courier service, all ILL is supported by the U.S. mail, which usually provides same-day or next-day delivery. The quality of facsimile is deemed to be too inferior to justify its use.

Automation plans for the 1984-1988 period include using the ULISYS system and the VAX 11/780 for online public access, circulation control on the other islands, management information systems, online reference services, and office management.

A.12 Idaho

Resource sharing in Idaho is based on the Washington Library Network (WLN) Resource Directory, published on microfiche and distributed to the 11 WLN member libraries, as well as nonmembers. LSCA grant money is used to distribute copies to 74 percent - 95 percent of the libraries, using a formula based on budget and population served. The 10 full WLN users include all significant public and academic libraries in the state (except for Idaho State in Pocatello using RLIN and Riches College on OCLC). The State Library uses LSCA money to pay for telecommunications, as well as membership fees. In addition, the State Library has just purchased IBM PCs with dial-up access to WLN for 92 percent of the larger libraries (i.e, circulation of 10,000 or more or budget over $80,000). Twenty-three of the libraries who fall into that category supplied the $1,000 cash match needed to utilize the PCs to access other databases and automated circulation systems. In total, a significant 96 libraries throughout the state have received equipment allowing access to resources.

The IBM PCs could also be used for electronic mail. The State Library will be installing a 16 bit IBM networking system with 8 terminals and 4 WLN PCs (i.e., modified IBM PCs).

There are automated clusters of libraries throughout the state: the Boise area using CLSI, the Dynix system is under consideration in the eastern region and Easy Data is used in the north. Idaho State has the VTLS system. The State Library is looking into linking existing systems.

To encourage automation and networking, the state has awarded two retrospective conversion grants using WLN; grants to two libraries to investigate Bibliofile's laser disk; and one grant for developing a union list of serials for all types of libraries in the Boise area. There are no specific requirements for retrospective conversion except the inclusion of an LCCN or ISBN.

The state is divided into three regions: North (Panhandle), Eastern and Southwest. The mail is used for inter-regional delivery with some courier service within regions. A telefacsimile experiment in 1982-83 concluded that facsimile transmission was not cost effective. There is a lot of borrowing from outside the state. The state provides training in use of the WLN Resource Directory and encourages libraries to use the fastest delivery, whether within or outside the state. The State Library is undergoing an agency wide reorganization. The recently established Library Development Division will be creating a library automation consultant position and establishing a plan in the coming year. There is currently no state aid to libraries. The state intends to at least begin collecting data on ILL to determine which libraries are net lenders and perhaps to request state aid for reimbursement to all lenders.

A.13 Illinois

Resource sharing in Illinois is coordinated by the State Library through the 18 regional library systems and ILLINET (Illinois Library and Information Network). Library systems are 100 percent funded by state funds since they are charged by law with serving the public libraries. Systems may include other types of libraries as affiliate members (i.e. academic, school, and special). ILLINET is composed of the 18 library systems, the 4 Research and Reference Centers, and 3 Special Resource Centers for a total of 2,500 member libraries who voluntarily agree to cooperate. The State has recently issued an RFP to evaluate the regional library systems, formed over 20 years ago.

There is no statewide telecommunications system but each of the 18 districts has a database (e.g. CLSI, DataPhase, DRA). The University of Illinois administers networking among 24 academic libraries and maintains the LCS (Library Computer System) database. Beginning July 1 the University of Illinois will load all OCLC tapes from all 280 OCLC libraries into the LCS database. Dial-up ports will be available on an experimental basis to small libraries to access the LCS database. The state has also granted LSCA funds to investigate a micro-based terminal-to-computer interface.

Another LSCA funded project involves placing terminals in medical facilities throughout the state and transmitting documents via telefacsimile.

All costs for the first year have been covered for the 30 participating libraries. The Union List of Serials will be used as the source of holdings.

There is a statewide delivery system supported by the state for inter-system ILL; the University of Illinois operates the delivery system. ALANET is used by some libraries for electronic mail. The four Research and Reference Centers receive compensation from the state for loans made (base grant plus $3.50 per item). Five of the 18 systems compensate individual libraries for loans made to non-residents. The Suburban Chicago system reimburses net lenders.

Eight of the library systems have CLSI systems, some dating back to 1974. There were no standards at that time and many systems have brief records which they are now converting to full MARC. Four systems currently share a DataPhase system and two share a DRA system.

The state considers computer-to-computer linkages to be extremely ambitious and is looking at other options. With many libraries having both OCLC and circulation systems, there is much duplication of effort and equipment.

A.14 Indiana

There are two components to formal cooperation among all types of libraries in Indiana: INCOLSA (the Indiana Cooperative Library Services Authority) and the nine Area Library Services Authorities (ALSAs). INCOLSA is an independent agency which brokers OCLC services, serves as a processing center for small libraries, maintains the union list of serials, provides information retrieval services, and investigates circulation systems.

INCOLSA does charge membership and OCLC fees. It receives state and federal funds for specific projects. Currently INCOLSA is implementing a plan for clusters of libraries to share automated circulation systems. INCOLSA is building the statewide database via OCLC. All long-range automation planning will be channeled through INCOLSA.

The ALSAs provide ILL, reference referral, group education, and centralized purchasing services. Like INCOLSA, each ALSA is governed by a Board of Directors composed of one member from each library and is independent from the State Library. The nine ALSAs cover all of the state's 92 counties and include all 239 public libraries in their membership. Each ALSA receives about $50,000 annually in state funds and $60,000-$70,000 in federal funds. The major urban resource libraries (i.e., those serving populations of over 100,000) receive additional LSCA funds. Each ALSA designates at least one member as a resource library. Requests that cannot be filled are sent to another ALSA, the State Library, or to one of five designated state resource libraries. The primary finding tool is OCLC, although some ALSAs have produced union lists. ALSAs are now looking into using micros to forward requests to other ALSAs and the resource libraries. The five resource libraries are compensated by the state for filling requests from outside libraries, provided they do not charge for the service. The state also sponsors a reciprocal borrowing program to public libraries that agree to make direct loans to patrons outside their respective areas.

There is no telefacsimile in use by libraries. The old TWX network was discontinued and OCLC is now used for ILL requests. The Indiana Higher Education Telecommunications Network, used by colleges in the state, utilizes microwave for audio and video transmission. The U.S. mail is used for document delivery.

A.15 Iowa

The code was recently changed in Iowa to allow the seven regional library systems to become multitype cooperatives. The regional systems must submit plans under the new code. Governance will be by elected boards. Most of the functions will be the same, with the emphasis on ILL.

The state has used a teletype network since 1969 (the Iowa Library Information Exchange, or I-LITE). The network includes the seven largest public libraries, three major university libraries, ten other academic libraries and the State Library. There is a system of reimbursing the university libraries, and the state will soon be reimbursing the other academic libraries. The seven public library systems have a contract with the major resource library within the region.

In August, 1985, the State Library will be switching from this outmoded system to a microbased system, call FRED, the first of a four-component networking plan. FRED is designed as an electronic communications system allowing requests to be routed to known locations. It is expandable so that additional libraries can be added at very little cost. Using dial-up phone lines, FRED is expected to result in an $80,000 savings the first year. ITT's DIALCOM will be used for electronic mail.

The second component is ETHEL, a CD-ROM video disk union catalog. Approximately $500,000 will be required to create the initial statewide database created from OCLC, CLSI, Auto-Graphics and other machine-readable files. Ongoing annual update costs will be $50,000. Money saved by replacing I-LITE will cover not only this annual production but additional grants for the CD-ROM hardware and/or collection development. The first edition of ETHEL is scheduled for September 1986 with the conversion beginning November 1985. The State Library will assume control of maintaining the databases.

The third component is using ETHEL for retrospective conversion and the fourth is a delivery system, still under consideration. Phases 2-4 of the above plan are still sketchy, with the state still seeking funds. The Network Advisory Committee will be meeting in August after FRED is installed.

OCLC services are provided by BCR (the Bibliographical Center for Research) and MIDLNET (Midwest Region Library Network), and the University of Iowa uses RLIN. There is a statewide 16mm film network, which charges participants a flat membership fee to receive films.

There are no statewide standards for bibliographic control. The state expects to include standards in its networking plan.

A.16 Kansas

The Kansas Library Network was established in 1981 by the state legislature to recommend statewide priorities for resource sharing and ILL, to develop an annual plan for library network activities, to review and evaluate policies, and to encourage public awareness. The nine-member governing board is comprised of members from seven types of libraries (library systems, public libraries, special libraries, private colleges, regents institutions, community colleges and public schools), plus ex-officio members: the State Librarian, the Commissioner of Education and a Board of Regents representative. A full-time director is appointed by the board.

The major project of the Network is the creation of the statewide union COM catalog, produced by the General Research Corporation (GRC). The Network provides the money for retrospective conversion costs paid to GRC, and the local library provides the manpower. Holdings of 333 libraries are included. The Network subsidizes the cost of the COM catalog which is produced semi-annually. One hundred seventy-seven locations pay $75 per copy.

There have been several problems associated with the COM catalog over the past six years. Lack of bibliographic standards has created duplicates and inaccuracies. There has been some disagreement regarding which collections to convert, and inadequate staff time and/or funding has prevented the completion of retrospective conversion in some libraries.

The structure for ILL support is provided by the seven regional systems of cooperating libraries, established by law in 1975. Each region must submit a plan for approval to the Kansas State Advisory Commission. The hiring of the regional director is also subject to the Commission's approval. Funding is a combination of federal, state and local support. The state is moving away from using LSCA grants for operations. The seven regional systems and 17 largest public libraries are linked via microcomputers (provided by the state) to support ILL. There is no reimbursement for ILL, but the state is considering a net lender plan for the future. There are protocols for ILL and an ILL manual which participating libraries must follow.

The Task Force on Document Delivery is investigating telefacsimile. Currently, only the academic libraries use facsimile. The state funds several local courier services and the U.S. mail is used also. There is no electronic mail system.

A.17 Kentucky

Kentucky is working on finalizing the Kentucky Library Network, which has been in development since the Task Force was created in 1981. Since building a statewide union catalog is part of the plan, the Network Development Branch of the State Library has awarded grant money for retrospective conversion. If LSCA money is used, the libraries must follow the MARC format and AACR2. However, some libraries within the state have non-MARC records.

At the State Library every department must work through the Department of Information Services for automation plans. No department has its own hardware. The State Library has contracted with SOLINET to do its retrospective conversion. With strict specifications to select only those records created and input by the Library of Congress, only 30,000 were converted via OCLC. The State Library concurrently started its own in-house conversion of the remaining 28,000 titles. Plans call for completion of the retrospective conversion by December 1985 and production of a COM (fiche) catalog in March, 1986. The state's collection is adult nonfiction to meet the needs of government and public libraries.

In 1973 the State Library established KENCLIP (Kentucky Cooperative Library Information Project) to supplement the informal network that exists within public library activities. Lump-sum grants are made to the four universities who provide backup ILL and there is no per item reimbursement. State employees are placed in each of the four academic resources centers, and the State Library also serves as a KENCLIP node. The staff have access to OCLC. In addition the state contracts with the University of Louisville to produce the Kentucky Union List of Serials, distributed to all participants, regional library headquarters, and selected state agencies.

Since all major libraries are part of SOLINET, OCLC is the basis for ILL and for future networking. The State is not seriously considering facsimile transmission of short documents.

A.18 Louisiana

Since 1968, the State Library has maintained and produced the Louisiana Numeric Register (LNR) in microfiche form. Using the state's computing center, LCCNs and holding symbols are maintained for over 100 public, academic and special libraries.

The State Library has recently completed a retrospective conversion and produced an author/title/subject fiche of its holdings, distributed to all public library headquarters, academic, and special libraries. Schools are not included in any type of ILL network.

The state is in the process of creating a statewide database, and is considering using LAMBDA and OCLC to convert other libraries' holdings. At present, it is undecided whether to continue production of the LNR. They are starting a pilot project using the shared concept SOLINET offers for ILL, with the State Library as the switching center. Non-OCLC libraries can use the LNR or access OCLC via the shared concept. There is no reimbursement for ILL.

In the early 70's, multi-county, multitype regionals were established for ILL and resource sharing. The concept was abandoned, however, because of a poor cost/benefit ratio, and one central system was established. Since most of the libraries' collections were created with public funds, the prevailing philosophy is one of cooperation.

Two geographic areas continue to share resources, however, taking full responsibility for cooperative cost sharing - Bayouland (South Central) and Trailblazer (North East).

The State Library uses ALANET. Telefacsimile is too expensive and not justified with 95 percent of all deliveries made in two days via the U.S. mail (and 86 percent in one day).

Three libraries in the state contract with AMIGOS, but the majority use SOLINET for OCLC services.

A.19 Maine

There are three regional multitype districts within the state comprised of public, academic, school, special (business/industry), and health science libraries. Each district (southern, central, and northern) has a designated resource center which provides ILL and reference services. The state provides an annual grant of $140,000 to each resource center, as well as giving three academic libraries which provide backup ILL services reimbursement of $1.00/title loaned.

There are no bibliographic standards imposed by the state. All major libraries are linked to OCLC with the state assuming membership fees. The only library automated in the state is the Portland Public Library. The U.S. mail is used for ILL.

The state has commissioned a report on automation due June 1985. A state borrowers card program was instituted in 1983.

A.20 Maryland

Networking in Maryland is a function of the Division of Library Development and Services and dates by law back to the early 1970's. The most recent project is the implementation of an automated statewide networking system, called MILNET, linking the State Library Resource Center, the three regional centers, the Enoch Pratt Central Library, five academic libraries and the three largest public library lenders. The automated interlibrary loan system is accessed via IBM-compatible microcomputers used as AGILE II terminals, linked via a synchronous communications network to the Auto-Graphics database. The online database of 790,000 titles was created from the state union database of 1.5 million titles, comprised of the holdings of 60 school, academic, public and special libraries. The decision was made to include only post-1967 titles on MILNET. Those libraries not included in the initial phase of this project will receive microfiche copies of the current database. The older records will continue to be distributed in microform to all libraries. The Union List of Serials, previously published in microform, has been incorporated into the MILNET database. There are three regional library centers in the state (Western, Eastern and Southern), each housed in a county library. The regional libraries are staffed by a regional librarian and an administrator. Initially serving only public libraries, all now serve academic libraries and some serve school libraries. There is no formal membership per se as the network structure is informal.

The Enoch Pratt Free Library serves as a resource backup to the State Library as well as being the regional library for the metropolitan counties. The State Library also utilizes the University of Maryland Law Library and the National Library of Medicine's databases at John Hopkins University as backup.

There is currently limited dial-up access to existing circulation systems, but the state is continuing to look at the possibilities of linking systems. They have evaluated facsimile, but found it to be too slow for statewide use. John Hopkins University is using facsimile within the campus boundaries.

The State assumes all costs associated with ILL for the Enoch Pratt Library and three regional libraries, and funding is allocated to the five academic libraries. The terminals for MILNET are purchased with state funds, as well as the microfiche copies of the database which are distributed throughout the state.

Although the AGILE II system also supports cataloging by providing access to the MARC database, the main function of MILNET is to promote resource sharing.

A.21 Massachusetts

The State of Massachusetts supports three regional library systems (further broken down into seven sub-regions within the regions). Each region has its own planning and budget committees and governing board. Primary services provided by the regional are ILL, document delivery, audio-visual services, reference and research consulting services, centralized purchasing and bookmobiles. Approximately $8.8 million in direct state aid is given to the regional systems. There is no reimbursement to libraries for ILL. Legislation to reimburse municipalities for loaning to non-residents has little chance of passing in the near future. The State Library is trying to appropriate more money from the legislature to cover the steady loss of LSCA funding.

A statewide automation plan was adopted in late 1983. A state network advisory council makes recommendations. The State Library's position is limited to administering and facilitating, rather than operating, the five existing regional networks in the state. Libraries throughout the state are developing their own circulation systems. The State Library is also planning to automate and eventually link the various integrated systems into a network.

A.22 Michigan

In 1980, the State of Michigan assumed networking responsibility for multitype libraries with the establishment of 15 regions of cooperation based upon the existing 17 public library cooperatives. Geographically the regions of cooperation cover the entire state but participation is voluntary. LSCA Title III monies are used to support resource sharing. Libraries are encouraged to use resources within their region before going to other regions or to the state's five major research libraries. Regions are encouraged to produce regional union lists. The state does produce a union list of serials, which is distributed to selected libraries. The cooperatives can reimburse net lenders, if they choose. Each cooperative may establish its own guidelines. There are no specific rules and regulations enforced by the state. Essentially Michigan has a very decentralized organization, with the State Library assisting and facilitating, rather than driving or leading.

The State Library is currently evaluating bids for an integrated online system. There will be dial-up ports throughout the state so that libraries will have access to the State Library's holdings. Because of the vast distances between regions, any kind of statewide system is not under consideration.

Several regions have replaced telecopier machines with microcomputer networks for transmitting ILL requests. About half the regions use IBM or Apple microcomputers for ILL and other projects.

The state still uses telefacsimile for transmitting ILL requests. The existing system is slow and the state is considering high-speed machines (10-12 seconds/page). The State Law Library is currently experimenting with telefacsimile for full-text document delivery to distant parts of the state.

The public library cooperatives provide document delivery. Vans are used in the south, whereas the north relies on UPS and the U.S. mail.

There are no guidelines for retrospective conversion or bibliographic description. However, OCLC is the basis of the statewide database, so libraries abide by OCLC guidelines.

A.23 Minnesota

Acting as a coordinator for resource sharing, the State Library has contracts with MINITEX (the Minnesota Interlibrary Telecommunications Exchange) and PLANET (the Public Library Access Network).

MINITEX is a program of the Minnesota Higher Education Coordinating Board, created to facilitate and implement the sharing of library resources. It is funded by the legislature and additional Title I and III monies. Currently comprised of 150 academic, public, state agency, and special libraries in Minnesota, South Dakota and North Dakota, MINITEX provides document delivery, reference services, collection development, online searching, continuing education, and bibliographic data base searching (via the Minnesota Union List of Serials and access to OCLC).

PLANET is operated by the St. Paul Public Library. It is supported by state and federal funds and admiministered by the Library Development and Services (LDS) unit at the State Library. PLANET provides backup ILL for materials not available in the 13 regional public library systems.

In addition to the 13 regional systems, seven regional multitype cooperative systems were established in 1979. Four of the seven systems operate ILL. Each individual system is responsible for: 1) planning and implementing resource sharing programs within their regions, 2) developing a bibliographic database, 3) developing delivery systems, 4) providing for a communications system, and 5) long-range planning for cooperative programs. Optional services include, but are not limited to, intrasystem reciprocal borrowing, cooperative collection development, cooperative reference services, staff development, and research and development. Each system is governed by a Governing Board comprised of representatives of the regional public library boards. The Advisory Council to the Office of Public Libraries and Interlibrary Cooperation (OPLIC) recommends overall policies and disseminates information at the state level.

The ILL system installed in 1981 is supported by a Texas Instrument 820 terminal, modem, and Teledisk micro forms request, paid for by Title I monies for each of the 25 participating libraries. Through the PLANET program the state reimburses $1.15 per search and $3.00 per request filled. There is no reimbursement to the multitype systems.

In 1981, a task force was created by MINITEX and OPLIC to develop standards for user, item, and institution identification; bibliographic record format; remote access; and data privacy. These standards were drafted and endorsed in December 1984.

The state is currently setting up a Library Telecommunications Task Force to analyze trends and make recommendations for the next 10 years. The state will appoint representatives from related agencies and libraries. The Task Force will be looking into telefacsimile for document delivery.

There is no existing state-level automation plan. Based on the plans from the multitype systems, the state's automation specialist will put together the legislative request for funding cooperative activities among the regional systems.

Six libraries are currently linked via the Mankato University integrated system, which is still undergoing development. The state is part of the National Biomedical Communications Network via the Greater Midwest Regional Medical Library Network.

A.24 Mississippi

In 1984, the Mississippi Library Commission (MLC) tested LSSI's (Library Systems and Services, Inc.) micro-based system to facilitate ILL request placement throughout the state. Following successful testing, LSSI's system was selected to provide a speedy, inexpensive means of forwarding ILL requests to the 20 initially-funded libraries. Budget cuts at MLC led to the creation of a new policy requiring public libraries to access other public libraries before contacting MLC. The LSSI system polls the libraries three times a week and forwards requests to designated libraries. The mail is used for delivery of requested materials. The state hopes to expand the ILL system to include more libraries. Libraries are encouraged to join a regional system in order to qualify for various grant programs. The Library Commission coordinates cooperation among the networks when requested. There are no formal agreements other than the standard ILL policies.

A main priority in the state is the Mississippi Union Catalog (MUC), started in 1981. Holdings for almost all public libraries are now included in the annually produced COM catalog. In 1984, the database was put online using Auto-Graphics' AGILE II system. The MLC and 3 public libraries are inputting retrospective conversion records for other libraries. MLC assumes responsiblilty for cleaning up the database and maintaining the holdings. Each of the terminals is linked to the Auto-Graphics computer in California. The MLC is also funding retrospective conversion through SOLINET's RECON service. The MARC format is required for the union catalog database. Auto-Graphics processes tapes from SOLINET and Baker and Taylor for inclusion in the database. MLC also uses Gaylord's Apple computer-based acquisitions system and has recently started using DIALOG for reference service.

A.25 Missouri

The Missouri State Network Plan of 1977 outlined a multilevel hierarchical approach to networking: single administrative units, cooperative units, resource networks, and the State Library. Seven resource networks have been in existence for several years. Six of the seven participate in ILL, and cooperative collection development is under discussion. Legislation has just been passed to give the network legal status. A set of administrative rules which took effect July 1, 1985 provide the basis for the networks being approved (e.g. goals and objectives, potential membership). Each network is governed by a Board of Directors chosen from the membership. The Missouri Library Network Board has a full time administrator, who is a professional librarian, and one to four assistants, based on ILL activity.

Each network receives funding from the state (primarily LSCA funds) and can charge membership fees. The state has provided funding for each network to purchase computer equipment. Although there was no attempt to standardize systems and hardware, the state ultimately expects to link networks.

The not-for-profit Missouri Library Network Corporation was established in 1981 to broker OCLC services and create the state database. Funding was supplied entirely by contributing members. The statewide COM catalog includes records from CLSI and Brodart, as well as the predominant OCLC records. Long-term plans include the linking of the University of Missouri system with the statewide database. Currently, four campuses of the University of Missouri are online.

The state expects that much of the future funding for networking will come from the state. They are moving towards development of standards, but still consider their mode of operation as experimental.

A.26 Montana

There are currently six public library federations in Montana. In the past each federation had its own hierarchical structure for ILL with a headquarters library, but the pattern is changing for libraries to contact other libraries throughout the state. The State Library is looking into expanding the federations to include multitype libraries but that will require a revision of existing laws.

The first edition of MONCAT, the statewide microfiche union catalog was produced in January, 1985 from records input into WLN. There are a total of 47 libraries on WLN, including the major academic libraries and some of the larger public and school libraries. The state pays for the principal and associate memberships. Most libraries are principal members contributing all cataloging. The State Library does the input for the associate members. LSCA grants ($20,000 this year) have been used to convert holdings. The first update of WLN will be produced in 1986 with LSCA funds, but the State Library is uncertain about future funding.

One academic library, the Bureau of Land Management Library, and the State Law Library use OCLC and are not included in MONCAT.

Only two public libraries in the state have automated circulation systems and two academic libraries are exploring automated systems. Some libraries in the state utilize the electronic mail service from CLASS. The U.S. mail is used for document delivery.

There is no reimbursement to public libraries for ILL. However, a statewide committee is exploring several issues and is in the process of creating a first draft of an automation plan.

A.27 Nevada

Nevada is in the process of creating a statewide network based on four regional CLSI installations (at Las Vegas, Reno, Elko and Carson City) linked via state microwave. All the public libraries, community colleges, and the two universities are directly connected to one of the four computer systems, allowing any library to hook into any other library.

GRC, as current provider of the statewide COM catalog, will continue to pull together records from RLIN and OCLC to maintain the Nevada database and to continue the production of the statewide COM and spin-off catalogs. GRC sends monthly tapes to the libraries to load into the CLSI database.

All four sites currently support circulation and ILL. There are twelve public access catalog terminals in Las Vegas, and Carson City will soon have PAC II terminals. The University of Nevada at Reno and the University of Nevada at Las Vegas will be discontinuing use of the present CLSI system. They are currently bidding for a separate system.

There is an Advisory Council to the State Library composed of eleven members, mostly librarians. The Library Automation Subcommittee is an informal guiding mechanism which does approve the budget; most of the funds are LSCA. There is no formal agreement between the state and the individual libraries. However, the local networks are more structured. In Carson City each linking library has one vote. In Las Vegas the CLSI system is owned by the public library which charges $200/terminal/month for all participating libraries. The system at Reno is composed of only the University and the public library. Elko has its own internal agreement.

Capital and equipment costs have been funded by LSCA monies. Ongoing costs are the responsibility of each individual library. The state also pays for one copy of the COM catalog per library and the bookmobiles. Libraries assume costs for additional copies and spin-off catalogs. Beginning next year the COM will be produced annually with one supplement.

All records converted via GRC are in full MARC format. The public libraries in Reno and Las Vegas are still undergoing retrospective conversion, as are the two universities who will secure their own funds. The Las Vegas Public Library will use the CLSI database to upgrade to full MARC format via the CLSI/UTLAS contract. Reno is near completion of its conversion to full MARC via GRC. GRC provides the libraries with a listing of records requiring modification and applies authority control to the database.

The state does not reimburse for ILL. Beginning next year they will determine who the net lenders are. In the past the state paid ILL staff in the libraries, but it has discontinued that service. The U.S. mail is used for delivery, except in Clark County where four districts share the cost of a courier service. There is a state library card which is acceptable throughout the state. Several years ago a telefacsimile system connected all major service points, but it was determined to be unsuccessful. A subcommittee of the Advisory Council to the State Library is currently investigating document delivery throughout the state.

A.28 New Hampshire

The New Hampshire State Library is working towards a distributed information network with the installation of a Data Eclipse 360 computer and the LS/2000 system. An online catalog is being created from the holdings of all libraries on OCLC since 1980. An interface function automatically adds records to the state database as a record is cataloged via OCLC. The ILL subsystem is expected to be functional in 1985, with acquisitions to follow.

Future plans call for the creation of six to eight regional systems. Each of these centers will support 20-30 public, academic, special, and school libraries. Functions will include automated circulation control, serials control, bibliographic control, public access catalogs, and management reports, as well as access to unique databases at the State Library. These unique databases will include the Status of Rules, the Status of Bills, Index to State Documents, Directory of State Agencies, Union List of Serials, and the Union Catalog of Book Holdings. OCLC will continue to be the basis for the union catalog for all participating libraries. Currently the State Processing Center catalogs materials for 116 public, 53 high school, and 15 college libraries. In addition, four other academic institutions participate in the union catalog but do their own cataloging.

Any library with a terminal or a personal computer will have access to the database. The state may use LSCA money to purchase PCs. Currently the public library in Concord is hardwired to the state's computer and is running the circulation module. In less than a year the Portsmouth area will install a shared circulation system for eight public and one school library, and the University of New Hampshire. The state will provide Titles I and III grant monies and will assist in retrospective conversion. There is no direct state aid to public libraries in New Hampshire. The local libraries wil share equipment costs, maintenance, and line charges.

Libraries not on OCLC are using other vendors for retrospective conversion. The state requires a full MARC record for inclusion in the database.

The ILL Protocol Committee is currently investigating procedures. An interim report should be available by the end of July. The State Library and the University Council run van delivery systems. All public libraries offer an online reference service via DIALOG. The state is not considering telefacsimile.

A.29 New Mexico

Fourteen public libraries in New Mexico and some academic libraries utilize OCLC for ILL activities. The state pays AMIGOS membership fees and the libraries pay user costs. There is no reimbursement to public libraries for ILL; however, the state does reimburse them for reference services. Currently there are not enough libraries on OCLC to constitute a statewide database. State funds have been used for retrospective conversion projects via OCLC.

The state is currently starting an electronic mail demonstration project. Using LSCA funds, certain libraries have been provided with equipment. The state will assume costs for telecommunications. Other libraries not funded can participate if they obtain the proper equipment.

The state is currently looking into telefacsimile, but currently relies on the U.S. mail for delivery.

A.30 New York

Resource sharing and ILL in New York State is supported by the Regional Bibliographic Databases and Interlibrary Resource Sharing Program. The nine Reference and Research Library Resource (3Rs) systems form the regions. Each 3Rs system is composed of one or more of the 22 public library systems in the state. With a new library aid bill signed in July 1984, each region must submit applications for various projects, as well as a five year plan, to the State Education Department. A board, comprised of heads of public libraries, approves the applications, allocating $80,000 to $200,000 to each region. The $650,000 total aid package for the current year was divided into: $144,000 for planning studies in 7 regions; $416,400 for retrospective conversion in 8 regions; $39,509 for a COM catalog in the Southeastern region and a microwave experiment and dial access study on Long Island. Full funding starting in 1985 will be $1.3 million per year. Each region appoints an agent to administer the program (7 agents are 3Rs and 2 are public library systems).

Since many regions are already automated, there is an active interest in linking regions. Most are using local funds to develop circulation systems and grant funds to complete retrospective conversion. In order to receive conversion grants, libraries must agree to provide the state with all records at no charge and follow the MARC format and/or ANSI format (serials).

Monroe County is currently experimenting with linking Geac, Data-Phase and LS/2000 systems.

The state currently follows a hierarchical system for ILL, referring requests from the local library system, to the 3Rs, to the State Library, forming the New York State Interlibrary Loan (NYSILL) network. The 3Rs are comprised of the 22 public library systems and over 500 academic, research, institution, hospital, and other special libraries. Requests that cannot be met by the State Library may be forwarded to the nine other NYSILL research libraries. In May 1985, NYSILL changed from TWX to utilizing Tandy 2000 microcomputers at the 56 sites able to access NYSILL.

The state has contracted with a consultant to redesign ILL within the state. Among the issues under consideration are: comparison of a point-to-point versus hierarchical structure; reimbursement of net lenders, and charging for services. The study is to be completed by January 1986. Currently, the state reimburses the nine NYSILL resource libraries for each request and provides a flat grant for participation.

Many libraries are using the OCLC subsystem for ILL instead of NYSILL, since NYSILL is intended to be used by the "serious researcher" only. One district is using a COM catalog for ILL with point-to-point access.

The state has one subscription to ALANET linking 10 (out of 48) school library systems, all nine regions, the 22 public library systems, and all South Central district public libraries. The Mid-Hudson Library System has set up an electronic mail system called NYLINE. Effective May 1, 1985, there is an electronic bulletin board for all libraries throughout the state. The state covers online expenses with the library providing equipment (i.e., a dumb terminal and a modem). The Northern and Central regions are currently using Easy Link.

Most regions have a van delivery service. Purolator courier is used in the larger cities. Referral libraries use the U.S. mail. There are existing problems with delivery, since several vans may be required to transport materials. NYSILL is currently investigating telefacsimile.

The State Library has an online catalog of over 900,000 records which is accessible via the Tandy 2000 microcomputers. The state's Burroughs Model 7900 computer supports a batch Documents Access System and a weekly batch Serials Control System, as well as the Collection Management System (e.g., online access) and NYSILL. The State Library is also hooked up to OCLC and Faxon's LINX system.

The state's Union List of Serials was evaluated in 1984 by an outside consulting agency. Currently comprised of 700,000 holdings (400,000 on OCLC; 100,000 on RLIN, and 200,000 from other sources), the Union List is accessible via the SUNY-OCLC NYCON system. The recommendation of the study was to continue to use OCLC for conversion and support of the list up to 1,000,000 inquiries/year, when a dedicated minicomputer would become more economical.

New York continues to experiment with various other networking projects. A proposal now under consideration by the legislature would provide $100,000/year to public libraries to provide automated circulation systems. There are two regional pilot networks linking public library systems, 3Rs, and one or more school libraries. There are funds to continue the twelve existing pilot school library systems projects and to include the 36 additional schools in the ILL network. The inclusion of the school library systems in the ILL network will necessitate the schools' developing their collections and completing retrospective conversion.

There is a preliminary Library Automation Plan for New York State in draft form (1984). The likely future of networking, according to this study, will involve the creation of large data files, a large number of various-sized computers, distributed systems, telecommunications networks linking libraries, continuing automation within libraries, and remote access by users. The recommended priorities for automation are regional planning, linking automated systems, and data conversion for projects which enhance resource sharing. Current machine-readable files include: OCLC, RLIN, LIONS (the New York Public Library's automated system), the New York State Library, the Regional Medical Library Network, and the Medical Library Center of New York, about 25 automated circulation systems, various microcomputer files, and other vendor supplied databases. The ultimate database of holdings of New York State libraries is estimated at 50,000,000 unique bibliographic records.

A.31 North Carolina

As a result of a 1982 networking feasibility study, the North Carolina Networking Steering Committee was established. As stated in the by-Laws, goals of the Steering Committee are to design a blueprint for network development, including:

- Building a statewide database;
- Encouraging zones of cooperation (ZOCs);
- Using appropriate technology;
- Improving document delivery;
- Estimating funding requirements;
- Developing a public education program;
- Meeting continuing education needs of libraries.

Representation on the Steering Committee includes all types of libraries, with representatives selected from the North Carolina Library Association, North Carolina Chapter of the Special Libraries Association, Triangle Research Libraries Network, and other members appointed by the Director of the State Library. For each of the goals, a Task Force was assembled of at least four people from two or more types of libraries. All groups meet and submit reports quarterly.

The 1983 report of the Task Force on the Bibliographic Database recommends a statewide database built on OCLC records, which allows the creation of non-OCLC records in MARC format following AACR2 rules. Libraries are encouraged to work on retrospective conversion, giving priority to technical material and local/specific subject areas.

Pilot ZOCs funded through 1984 with Title III monies were:

- The Western North Carolina Union List of Serials created by SOLINET for the 37 participating libraries.
- Cooperative Libraries of Nash and Edgecombe counties (CLONE) who created a union catalog of 3 colleges and 2 public libraries.
- CLEVE-NET, an electronic mail system connecting libraries in Cleveland County which allow reciprocal borrowing.
- Wilson County Project, an electronic bulletin board for all libraries in the county, including high schools.

The Task Force on Technology is charged with:

- Monitoring the pilot ZOCs;
- Monitoring developments in telecommunications;
- Surveying the extent of library automation in North Carolina;
- Drafting a design and timeframe for a phased development of the statewide network.

To date there are no official plans, but after 2-1/2 years of discussions, the State Library feels it is close to making decisions.

There is no reimbursement for ILL by the state. No specific grants have been awarded for retrospective conversion. Centralized processing is partially subsidized by the state (at $1.85 per volume). Many libraries throughout the state have installed automated systems, which will eventually be linked.

As noted above, CLEVE-NET is a pilot electronic mail system. The Task Force on Document Delivery has looked into telefacsimile, but no final report is available.

A.32 North Dakota

The North Dakota State Library contracts with MINITEX for ILL and document delivery within the state. There are no regional libraries. The state uses OCLC as its database and for ILL. Over 20 libraries, including the largest, are on OCLC. The state has distributed $43,500 to six public libraries to start converting retrospectively via OCLC.

The state is currently considering a statewide online system for circulation, cataloging, and ILL; a report is due in January 1986. An applications transfer team from IBM is scheduled to provide consulting services in August 1985.

Currently the state pays for a fixed number of loans per year via MINITEX. Public libraries not on OCLC can use the State Library's toll free number to have resources checked statewide. A committee is currently investigating standards for bibliographic control. Twenty-six libraries are on Easy Link. Only medical libraries in the state are using telefacsimile.

A.33 Ohio

There are three types of regional cooperatives in the state of Ohio: 2 multitype Multi-county Cooperatives (supported by Title III funds), 6 public library Multi-county Cooperatives (supported by Title I funds) and one Area Library Service Organization (ALSO), partially funded by state and federal income. The state is seeking to revise the code to open up the ALSO structure to allow multitype participation. The ALSO is the only legal networking entity. Each of the regional cooperatives has its own administrative structure and sets its own goals for resource sharing. One of the Title III cooperatives has a nonprofit corporation status. Both Title III cooperatives charge membership fees to meet the 50 percent cash match requirement for grants.

Six regional resource centers serve as the major ILL and reference centers. OCLC is the source of holdings information. The state reimburses the resource centers on a per request basis, plus 10 percent for administrative overhead. The state also reimburses public libraries who are major net lenders.

In 1981, the Ohio Multitype Interlibrary Cooperation Committee proposed a Library and Information Services for the Citizens of Ohio (LISCO) Plan providing for multitype cooperation in three areas: resource sharing, reference and information services, and continuing education.

Resource sharing tasks include:

- Reimbursement to libraries;
- Development of standards for retrospective conversion, funding for conversion, and the production of union lists to form the basis of a statewide database;
- Providing a statewide delivery system;
- Funding for telecommunications systems.

Reference and information services include:

- Forming and compensating resource centers;
- Supporting telecommunications costs;
- Linking with established databases;
- Developing databases for the state.

Continuing education provides for:

- Establishing a statewide clearinghouse of educational programs in Ohio;
- Developing specific programs to meet staff needs.

The state re-evaluated the LISCO recommendations in 1984 and established goals for 1985 for each region. However, there is no formal written statewide plan. The overall philosophy is that the state should not impose a structure. There are a variety of automated systems throughout the state with various levels of cooperation (e.g. shared circulation systems and COM catalogs). There are no state-imposed standards for bibliographic records. The rural areas are investigating telefacsimile.

A.34 Oklahoma

OCLC is used as the basis for a statewide database and source of holdings for ILL. The state is divided geographically into 15 multitype library transmission sites, forming the Oklahoma Telecommunications Interlibrary System (OTIS). If a request cannot be filled by the OTIS network, OCLC is used for out-of-state access. Protocol moves the request on OCLC from smallest to largest libraries. Libraries are reimbursed for processing filled and unfilled requests. The state picks up the AMIGOS membership fees, an estimated amount for send and produce fees, and $1,000/year postage for each member. Grants were given to all OTIS sites to purchase OCLC M300 terminals, and to some sites for printers. The U.S. mail is used for ILL. The State Library is the only library using telefacsimile for document delivery. There is no electronic mail.

Grant money has been awarded for retrospective conversion. No standards have been established. The State Library and University of Oklahoma are joining together to link their DataPhase circulation systems. The State Library is also working towards an automated information center to provide state, community, and local library information services.

A.35 Oregon

There are no regional or official library cooperatives in the State of Oregon. The State Library is unofficially building a statewide database on OCLC, with academic, special and public libraries encouraged to join OCLC. Three libraries are using WLN. The state has used LSCA funds to help libraries get started.

There are several local cooperative automation efforts in process around the state. Community colleges, schools and public libraries in Clackamas County have installed a shared ULISYS system, as have public and community college libraries in Josephine County. Eugene Public Library, other public libraries in Lane County, and Lane Community College will be building onto the Eugene database. The other libraries will be downloading their records onto PCs for local circulation systems. A three county system, projected to be the largest in the state, is in the process of selecting a vendor for an automated system. Washington County will be issuing a bid soon for a joint system for all public libraries and a liberal arts college. The Chemeketa Cooperative Regional Library Service, administered by the community college, is comprised of all 16 independent public libraries.

The State Library has recently automated with DRA, because of its blind and physically handicapped component. The Library is beginning to input the main library's records. Ports will be available throughout the state for anyone to access the State Library's collection.

Most of the public libraries around the state borrow from other public libraries or the State Library, which provides 50 percent of all ILL statewide. The State Library does not reimburse libraries for ILL. The legislature denied the budget request for ILL reimbursement, building a statewide database, and operating a delivery system. However, the State Library anticipates another attempt for funding in 1987. Libraries throughout the state use the ALANET, CLASS and OnTyme electronic mail services. A statewide telefacsimile system is under consideration. There are some county library courier systems, and the Oregon State System of Higher Education operates its own delivery system. Most libraries use the U.S. mail for document delivery. The state is in the process of preparing an automation plan within the year.

A.36 Pennsylvania

All public libraries in the State of Pennsylvania participate in the District Library Center Program, which funds the designated public libraries in each of the 28 districts for providing supplementary services, including ILL. Four Regional Library Resource Centers have provided backup ILL since the early sixties, but their services are on the decline. Pennsylvania has recently instituted a program of action for all residents to have timely access to all types of materials and information, regardless of where they live or institutional affiliation. The program, called Access Pennsylvania, focuses on three areas:

- Using technology to promote more effective sharing (e.g., developing a statewide database);
- Improving local financial support of public libraries;
- Enhancing statewide access to resouces (specifically enhancing the ILL program and developing a statewide library card system).

A series of studies was authorized by the State Library to look into each area. Based on the recommendation of the ILL study, the State Library requested $1,500,000 for reimbursing libraries for processing and fulfilling ILL requests. There is now a statewide library card system. Revision of the now-outdated 1979 ILL code is a priority project for 1986.

All major libraries in the state are on OCLC. Several smaller libraries are using various vendors to produce COM catalogs. The two networks (PALINET and the Pittsburgh Regional Library Center, PRLC) which support OCLC are currently looking at OCLC contracts.

The union list of serials (PAULS) is maintained online via OCLC. It currently contains 80,000 titles from public, academic and special libraries and is distributed on microfiche to all participants.

A multi-year program is underway to provide money to high school libraries for retrospective conversion; $500,000 in LSCA money is available for FY 86. MARC format and AACR2 are requirements for all machine-readable records.

There is a statewide delivery system (IDS) connecting all district library centers. It is funded 50 percent by the state and 50 percent from local membership fees; each library is a member. The local fees are based on a sliding scale, with the heaviest lenders paying the highest fee. Fees fall in the range of $1,000 - $3,000 per library. A telefacsimile system supporting ILL is provided by the state for each of the 28 district libraries.

The State Library has created a statewide electronic mail system. Mailboxes have been created for over 100 libraries throughout the state (35 system headquarters, 28 district libraries, community college libraries, and the state university system libraries).

The State Library produces a COM catalog of its holdings for distribution to state agencies and the 28 district libraries. The Library plans to switch to an online catalog.

A.37 Rhode Island

The Rhode Island Interrelated Library Network, administered by the State Library, connects five Interrelated Library Systems, composed of all types of libraries. A 1968 law authorized funding for libraries in the network. All participating public libraries which meet the minimum standards receive state funds. Salaries of about 100 staff throughout the state are paid by the state, although they are actually employees of the local libraries. Regional centers in each of the Systems coordinate ILL among public and school libraries and pass requests to the Special Research Centers (10 academic libraries and 1 historical society library). The state provides $9,500 - $10,000 to each Special Research Center. The four Regional Library Centers receive approximately $25,000 each, and the Providence Public Library receives about $540,000. The Providence Public Library acts as the network's switching center and serves as the State Library collection. Materials from out of state are searched via NELINET.

The Interrelated Library Network is looking at linking CLSI systems. Currently, the Providence Public Library shares its system with Barrington and Cranston. The Regional Library for the Blind and Physically Handicapped has a DRA system, but all other libraries in the state are using CLSI.

Before switching from teletype to electronic mail (via the Interrelated Library Network), the state investigated telefacsimile but rejected it because of cost. There is no formal statewide automation plan.

A.38 South Carolina

All public libraries in South Carolina are county libraries, mandated by law. The State Library officially has jurisdiction over only public and institutional libraries, except for Title III grants for networking. Legislation signed June 25, 1985, recodified the original 1929 legislation to include the State Library's new responsibilities for networking and ILL.

Since the State Library's collection has been developed specifically for public libraries, libraries go to the State Library first for ILL. If material is not available at the State Library, a staff member goes to the University of South Carolina twice per day to check out materials. There is no charge to the State Library for loan of the University's materials. Also, there is no reimbursement to other lending libraries in the state.

The State Library has just selected DRA's ATLAS for an integrated online system linking all agencies and county libraries. The 1984 proposal for the South Carolina Network online system states that it is the role of the state to provide a central computer system to host the statewide network and to provide telecommunications links connecting libraries throughout the state.

The three-year plan for implementation calls for establishing the host systems in year one, communications systems in year two, and linking local systems in year three. During the 85/86 budget year, the online catalog and circulation/ILL modules will be implemented and the communications system tested and installed to allow access to the state's catalog by the public libraries and some agencies. In Phase II the remaining agencies, state institutions, TEC libraries and academic libraries will be connected; school library participation will be tested and other systems functions will be implemented (e.g., acquisitions, film booking, electronic mail). In Phase III the statewide union list of serials will be developed, the Monthly Catalog of Federal Documents will be online, and school libraries providing ILL will be connected.

The 1985-86 budget requested $652,850 for network development and operations; $188,800 is for ongoing operations, including a new position of Network Coordinator at the State Library.

Related activities include investigating developing technologies to assist local libraries with retrospective conversion and to monitor the development of the state microwave telecommunications system. Three current projects involve testing the best method for small libraries to convert their holdings. Forty-eight libraries, including most of the major libraries, are on OCLC. LSCA money has been provided to libraries who join SOLINET. Currently there are 2.2 million records in the SOLINET database.

Ultimately all systems in the state will be linked. Three of the major universities and a number of public libraries currently have automated circulation systems.

A.39 South Dakota

South Dakota is actively planning a statewide integrated online system using the BLIS software, a shared mainframe in Central Data Processing of the Bureau of Administration, and the State Telepac system for telecommunications. Start-up costs will be included in the 1987 budget for the 30 original participating libraries. The initial database of 1,300,000 titles will be created from OCLC and other MARC tapes. Smaller libraries will use BLIS for retrospective conversion. Most likely only 10-15 additional libraries will be brought into the system when it is fully configured.

All libraries in the state are organized into one informal multitype system, consisting of public, school, special, academic and health sciences libraries. The 15-member Advisory Committee is comprised of members from the libraries. The state's position is to preserve the autonomy of the individual libraries. The State Library staff comprise the Cataloging Review Committee, which will have the authority to revise and correct records in the database. There are existing standards for entering records into the database and for bar coding.

ILL is not carried out via OCLC, and the State ILL network utilizes Texas Instruments terminals and Teledisk hard disks, funded by the state. Easy Link has been used for six months for electronic mail. LSCA Title III money is used to support a flat fee for participating libraries.

The state expects to use money now used to support OCLC for supporting the statewide database. The Task Force on Library Automation, in existence for 3-1/2 years, was disbanded on May 1, 1985. An Advisory Committee is now being selected and will meet in July 1985.

A.40 Tennessee

The State of Tennessee is divided into 16 regional public libraries, 4 are synonymous with the major metropolitan areas and 12 are multi-county. Each region has a headquarters library which coordinates ILL requests that cannot be filled by the individual libraries. The four metropolitan libraries serve as Area Resource Centers (ARCs) and are supplied with lump sum grants ($80,000 each) for ILL and reference support. Each metropolitan library is backed by a university library.

ARCs forward requests through OCLC for items they are unable to fill. Forty-five of the largest libraries in the state utilize SOLINET. Title III grants have been awarded since 1975 to the ARCs and large universities to support input of retrospective records into SOLINET (i.e., terminals, staff, and SOLINET fees). At this time the state does not know what it will do with the resulting statewide database. There is resistance to COM from the small libraries, although an April 1985 study (Applications for Automation in Tennessee's Regional Library System) recommended COM. The study was commissioned by the State Library to identify and recommend potential automation applications within the existing regional library system structure. Cooperative arrangements among public, academic, special and school libraries were to be investigated, as well as areas in which automation would not be justified. The study was to include an implementation strategy for a specific system, with costs and recommended modifications of work procedures.

Conclusions of the study included the following:

- The analysis of the current manual cataloging activity within the regions showed the existing system to be inefficient, and detrimental to producing a bibliographic database. AGILE II was determined to be the least costly option of the three systems compared (AGILE II, SOLINET and UTLAS).

- Because of the uneven distribution of resources (mostly in the metropolitan areas), resource sharing is the only viable approach to providing access to materials throughout the state. The state should continue to use the ARCs and offer additional support by creating a statewide database; over 4,000,000 records have already been created. A COM catalog, minimally composed of the four metropolitan libraries, would be the most cost-effective alternative.

- With a projected implementation of a bibliographic utility in 1986, the regional library centers could be converted in 1988 after a sizeable database had been created.

- A statewide union list of serials would facilitate resource sharing activities and ARC operations.

- Microcomputers should be used in the ARCs for administrative functions.

Although several libraries have their own circulation systems, the largest libraries are not yet automated, making the linking of existing systems unrealistic for building the state database.

Bookmobiles are used mostly for delivery, as well as the U.S. mail. Telefacsimile is being considered for document delivery in the metropolitan areas.

A.41 Texas

The Texas State Library Communications Network (TSLCN), which encompasses the entire state, consists of ten major resource centers providing ILL service to the smaller libraries in the 10 systems. Each of the centers is on OCLC and uses the OCLC ILL sub-system. The centers also support cataloging, since collection development is a primary concern. Combined state and LSCA funds in the amount of $1,500,000 have been appropriated for ILL in the current budget year. The centers serve all libraries in the state, including corporate libraries, at no charge. The centers are administered fiscally by the libraries in which they reside. The state assumes costs for terminals; a total of 47 are in the 10 centers.

The systems also get state money for developing the resource libraries. Under the Bibliographic Network Project (BibNet), OCLC charges are subsidized for the major bibliographic resource centers to enter records via AMIGOS. Retrospective conversion is also under BibNet. Other than through OCLC, there is no access to the holdings of the resource centers.

The State Library is awaiting approval by the Texas State Library and Archives Commission for a resource sharing plan linking local networks. Title III funds have been awarded for various multitype cooperative efforts. For example the public library and college in Amarillo have used state and local funds to install a shared DRA system. To date no projects have been supported to link even similar systems, such as CLSI. However the plan under consideration relies heavily upon the development of technology to link systems.

In addition to the TSLCN and BibNet, there is a statewide union list of serials to support resource sharing. Many regional lists were combined and additional holdings added to OCLC, as of March 1985. The project is scheduled to last for 5 years. Microfiche copies are supplied to non-OCLC members at no cost. The state will also sell copies to OCLC members at $25/copy and to non-serials contributors for $100/copy. The union list will be updated annually. LSCA funds were used for FY 1985. Bibliographic standards are set by OCLC, however it is up to the individual library to define a serial and to determine what information to include.

Some of the centers use a courier service for delivering materials to the branches, but most rely on the U.S. mail. Service is emphasized over speed. The Southwest Texas region is installing four telefacsimile machines for resource sharing purposes.

A.42 Utah

In June, 1984, Utah established the Utah Network of Cooperating Libraries (UNCL), a formal structure whose purpose is to help libraries meet the information needs of their patrons by 1) developing an organizational structure and procedures, and 2) encouraging the use of technology which will facilitate and support bibliographic access and resource sharing. There is a formal membership agreement by which the individual library agrees to maintain effort at the local level to meet the needs of its patrons before approaching the network. A copy of the network collection development policy and ILL policy must be included with the signed membership agreement.

UNCL is governed by a nine-member Advisory Council to the State Library. The members represent five groups (larger academic, smaller academic, larger public, smaller public, and special libraries) and are assigned ex-officio to the Interlibrary Loan Council and the State Library. The network is supported by state funds which must be appropriated yearly. There is no membership fee for network participation.

UNCL is based on the 1.6 million titles in the OCLC database which represent holdings of 15 libraries (7 academic, 6 public, and 2 special). Of the 13 libraries with leased-line access, the state pays for the first terminal. Two libraries on UNCL have dial-up access to the State Library and code records for the Utah OCLC cluster libraries. The state splits the OCLC cost with the cluster libraries. Net loans are computed from the monthly statistical reports submitted by each member, with net lenders currently reimbursed at $6.00 per item.

Although the purpose of UNCL is resource sharing, there is a pilot reference program beginning August 1, 1985. The state expects to support retrospective conversion for those libraries not yet on OCLC. These libraries are building a union list of serials on OCLC.

The state relies on the U.S. mail service for document delivery. A courier system used in the past was determined to be ineffective and was disbanded. The Utah College Council Systems Committee is investigating electronic mail, but implementation is not imminent. Several academic libraries are experimenting with telefacsimile, but there are questions concerning costs versus benefits.

A.43 Vermont

The statewide resource sharing program in Vermont is based on voluntary contribution from all types of libraries to the statewide card union catalog. There is no reimbursement to libraries for loaning materials.

The University of Vermont, the Vermont Department of Libraries, and Middlebury College are entering a joint contract with a vendor to develop an online catalog. Funding will be primarily a combination of state and university monies with some LSCA grants. The State Department of Libraries hopes to include the state colleges in the system in two years, and all libraries in the state in five years. Once a contract is signed, a more formal networking structure should develop. However, it is unlikely that rules and regulations or formal standards will result. The Department of Libraries does expect to make recommendations regarding vendor selection and/or software.

The ten major academic libraries in the state use OCLC. The state is one of OCLC's first users of MicroCon for retrospective conversion, but they are also considering purchasing equipment such as Bibliofile's laser disk system to loan to libraries to complete their own retrospective conversion. There have been no funds available to libraries for conversion.

The state maintains a staff position at the University of Vermont for ILL and provides a small grant to the University. The U.S. mail is used for document delivery. Western Union's Easy Link is used for electronic mail. The University of Vermont experimented with telefacsimile several years ago, but currently is waiting for the technology to improve.

The state is part of the North Country Libraries Film Cooperative, sharing films with New Hampshire and Maine.

A.44 Washington

Legislation enabling multitype library cooperative development in Washington dates back to 1967. Legislation passed in 1976 established the Washington Library Network (WLN) and allowed the Washington State Library Commission to establish rules and regulations governing network development. Within the WLN, there are four components of cooperative services: ILL, reference and referral, telecommunications and computer systems. Legislation passed in 1979 allowed the computer services organization to open participation in its governance to other states and to sell its software.

Libraries within the state participate in WLN on several levels: 1) as basic members, sharing in the resources and participating in planning through seven Library Service Areas, 2) as members of special committees and task forces, and 3) as users of the automated database services (e.g., acquisitions, cataloging, online and microfiche holdings information, and custom catalogs).

Within the state, there are 82 principal or associate members (accounting for 50 percent of the total membership in WLN), 29 search only members, and 23 conversion-only members. Principal members have online access to WLN either through a WLN PC terminal linked by a dedicated phone line or through an ASCII-compatible terminal linked via Telenet. Principal members agree to enter holdings for current acquisitions and original cataloging when necessary.

Associate membership allows libraries without terminals to access WLN and contribute holdings as the principal members do. Associate members contract with a sponsoring principal member.

Search-only members have access to the bibliographic database, including holdings and authority files. Access is dial-up via Telenet.

Conversion-only members are sponsored by a principal member to add retrospective holdings for a COM catalog (either their own or a union catalog). Access is either online or via Apple or IBM microcomputers' floppy diskettes.

The state provided WLN with development money and operating money in 1976 and mandated that the network become self-sufficient by 1981. It was, in fact, self-sufficient prior to that time. Currently, funding for the network comes primarily from fees charged for various services and from some grant money.

The State Librarian is Executive Officer of WLN, with the Executive Director and Deputy Director of WLN reporting to him. However, as a user of WLN services, the State Librarian is also a member of the Computer Services Council. This advisory council is comprised of 11 members: four from the State of Washington, and at least one from each other state in the network. The council, in effect, runs the network. Its Bibliographic Standards Committee establishes guidelines for cataloging. More informal user groups have been established in recent years to provide positive feedback to WLN. Currently, there are 15 librarians, 20 data processing employees, and 5 staff members at WLN.

The focus of WLN is to remain a regional network for the Pacific Northwest Bibliographic Control (PNBC) states (Alaska, Washington, Oregon, Idaho and Montana), although Oregon uses mostly OCLC. The philosophical basis for the network remains resource sharing. Therefore, holdings are displayed to facilitate resource sharing, and cataloging is provided economically. WLN is currently working heavily in the microcomputer area to allow smaller libraries to access the database. There are current links to DataPhase and Geac, with a CLSI link under development.

The WLN database of 3.4 million bibliographic records and 3.8 millon authority records is loaded on an Amdahl V-6 computer. The network has experienced the typical problems associated with matching non-MARC records by machine-generated search keys.

Legislation was introduced in the 1985 session to make WLN a public nonprofit organization within the state government, but the legislation did not pass at that time. However, the legislature did approve a name change to the Western Library Network to reflect the network's expanded area of service. The legislation for change in organizational status will be reintroduced in the 1986 legislative session since there is a precedent in the state for the establishment of public nonprofit organizations within the state government structure.

The Library Planning and Development Division of the State Library addresses the other aspect of resource sharing — materials delivery. Currently, there is a 12-member telefacsimile network and a 65-member ground courier network, established in March 1985 as a two-year LSCA funded demonstration project. The service will be continued by consortium activity beginning in March 1987 with every participating library contributing (i.e., all types of libraries except schools). The state is in the process of changing from use of voice-grade telephone lines to satellite communications.

A.45 West Virginia

West Virginia has almost completed the loading of all titles from 1976 to the present into its online union catalog, comprised of approximately 700,000 unique titles from public, special, and academic libraries. The current online system utilizes the VTLS software and runs on Hewlett Packard equipment. The online system replaces the earlier microfiche union catalog, created from 1976 to 1984. The current system is based on seven direct service nodes, linked via telecommunications. These service nodes are 50 percent funded by the state. Each node establishes its own governance and administrative structure and provides its own staff. The local share for participating in the network is based on the percentage of holdings the individual library owns within that region. (For example, if a library owns 20 percent of the holdings, it would pay 20 percent of the 50 percent share.) The state pays for all hardware, software, and communications.

The state will provide cataloging if the library buys-in at the 50 percent level. The MINI MARC laser disk system, with the complete MARC database, is loaded into the state's Hewlett Packard system for cataloging.

The VILS software can handle records from diverse sources. OCLC tapes and Science Press files were used to create the initial database. The state estimates that 60 percent of a library's retrospective titles will be input by each library as they circulate books. The 600,000 titles in the pre-1976 union list were never converted into machine-readable form and are not under consideration for mass conversion and input at this time. An estimated 20 percent of these older titles are already in the union database.

The state uses local delivery vans and the U.S. mail for document delivery. For telecommunications they are using the state emergency channel microwave in various parts of the state and considering cable TV as well. Large retail chains with over 600 cash registers online have agreed to provide an online interchange of data to the service nodes "for the public good." The state is not considering facsimile since most items loaned are books. They are working on a minicomputer-based system for use where telecommunications costs are prohibitive.

A.46 Wisconsin

There are 17 public library systems in Wisconsin. Although many encourage multitype cooperation, there is no state funding for multitype networks. Public libraries channel ILL requests from all types of libraries to the State Library's Reference and Loan Library. Academic libraries predominantly borrow from either other academic libraries or WILS, the Wisconsin Interlibrary Services, operated by the University of Wisconsin at Madison. The State Library contracts with WILS to fill ILL requests from public and school libraries that it cannot fill. The funding is a flat fee of approximately $110,000, based on an estimated number of requests. The state also contracts with the Milwaukee Public Library to serve all libraries whose requests are referred by the State Library or WILS, or who are designated direct access libraries. Funding is about $130,000 to cover staff and other processing costs.

The state has encouraged resource sharing within the library systems through WISCAT, the statewide COM catalog, whose third edition contains over 2.3 million titles and over 8 million holdings from 312 libraries (public, school, academic, and special). The MARC records added to the database for each yearly update come primarily from OCLC and MITINET. Using LSCA grants, the State Library has provided retrospective conversion grants to selected non-MARC libraries (whose records must be converted to MARC and matched against the database by Brodart) and to other libraries, which use the COM catalog and MITINET to add their holdings to the statewide database. The LSCA grant money (about $2,000 per library) includes production of the MITINET software, processing of the diskettes, training and support, adding records to the database, contact with the vendor (Brodart), copy of the MARC database on fiche, and a copy of WISCAT. In addition, some libraries also receive up to $0.50 for each title added to the database. The individual library supplies the first microcomputer needed to add its holdings, but the state will loan PCs if more than one is needed. Each year 1.2 - 2 million dollars have been available in LSCA funding for restrospective conversion.

The state is encouraging systems to coordinate input into WISCAT as well as to coordinate resource sharing. LSCA-funded copies of WISCAT are distributed to the over 300 participants and to 3-4 systems. The state has allocated money for training libraries in the use of WISCAT and for MITINET input.

The biggest technical problem in creating the statewide database was the inclusion of the non-MARC files, most which lacked any type of standard number to use for matching against the MARC records in the database. MITINET would have been a simpler alternative. Some individual libraries have had the rather predictable problems with converting their shelflists. The biggest concern, however, has been associated with the inclusion of OCLC records in the database and subsequent use of these records for retrospective conversion (i.e., third party use of OCLC records). The State Library may discontinue the inclusion of OCLC records if the issue becomes too political. A staff committee at the State Library is looking into future options to the microfiche catalog (e.g., video disk) and online options to OCLC (if the situation warrants not using OCLC.)

The three state reference centers (the State Library's Reference and Loan Library, WILS, and the Milwaukee Public Library) participate in an electronic mail system maintained by WILS. The system is based on IBM PCs and will be replacing the existing teletype system. A bulletin board is part of the present system. Plans are being considered for all libraries to transmit ILL requests directly without going through the State Library (i.e., using an IBM or Apple).

WILS was funded to experiment with telefacsimile. It was determined to be too expensive for public libraries, which loan books 80 percent of the time. The academic libraries experimented with using 3M equipment. The conclusions of that study were that using the equipment for ILL request transmission was too time-consuming, and the transmission of periodical articles was too costly.

The state is beginning to fund delivery of materials. Seven of the 17 library systems will use a truck delivery system, tied into the Reference and Loan Library.

The state is working with several vendors (e.g., Winnebago and Follett) to develop software to reformat MARC records into their system format. A primary focus of the existing plan is helping the smaller libraries to automate. The state believes it has developed a state database which currently can be used for a variety of functions, but which will tie into newer technologies as they are developed.

A.47 Wyoming

All public libraries in the State of Wyoming are based on county systems which are the basis for statewide cooperative efforts. Phase I of the statewide automated integrated system is currently in progress with 15 of the largest libraries' records being loaded into the Geac database. The system will be tested in July 1985, with testing and payment completed by December. Interlibrary loan and circulation modules will be implemented first. Under Phase II of the plan, all remaining county libraries and community colleges will gain access to the system for ILL via modems and microcomputers. Two or three libraries may also be brought in for circulation, if they have collections of over 100,000 titles.

The University of Wyoming's file of over 364,000 MARC records was used to create the initial master file. OCLC tapes from five libraries were matched against the master file and non-matches were added to the database. Other non-OCLC libraries' records were added by using the Numeric Register and matching LCCNs against MARC and REMARC files. The online file currently being loaded will contain 500,000 titles from public, academic, and community college libraries, and from the State Library, with an additional 250,000 titles to be added by December 1985.

An in-state Geac users group is responsible for bibliographic control and establishment of the hierarchy for selecting the master record. State Library catalogers can modify any record except the University's, whose cataloging remains unchanged. The LCCN will continue to be the match- ing field for adding non-OCLC records to the database. The State Library Board owns the system, but the users will ultimately make all decisions, with the State Library acting as coordinator. Two State employees have been hired to maintain the Geac system. There have been some problems associated with establishing the hierarchy of record selection and with anticipated software problems, but they were addressed quickly and efficiently.

The State Library will continue to produce the union list of serials every two years. Initially started in 1972, the union list displays holdings for all county libraries, major public schools, academic libraries, and the State Library.

ILL is intra-state only, although libraries can use OCLC for out-of-state loan activity. The state does not reimburse libraries for ILL. In fact, there is no direct state aid to libraries, and little LSCA money is available. However, with the Geac system's capability to provide data needed to determine net lenders, the State may revise its policy. The U.S. mail is used for ILL delivery. Electronic mail will be bought as a Geac module.

Title III grant money has been used for online database searching using BRS and DIALOG. Public and community college libraries have been organized into reference regions.

There is a Health Sciences Information Network managed by the University of Wyoming's Science Library. Consortia are built around the community colleges and include hospital libraries, some public libraries, and the University. The State Librarian sits on the Advisory Council of this network.

APPENDIX B

SURVEY RESULTS

INTRODUCTION

The tables in this Appendix present the results of King Research's "Survey of Library Automation and Networking in the Commonwealth of Virginia." A total of 329 libraries returned the questionnaire which had been mailed to 479 libraries (academic, institutional, public and special) and school divisions in the state. The response rate of 69 percent was excellent for a questionnaire of this length; however, not all questions were answered by all libraries.

Most of the survey data were tabulated and analyzed by three variables:

- type of library (table numbers containing the letter "A");
- size of library in terms of number of volumes/items held (table numbers containing the letter "B");
- geographic region in which the libraries are located (table numbers containing the letter "C").

Some respondents removed their library identification information from the questionnaire. Their responses were listed as "unknown" in the tabulations by type of library. Respondents that did not identify their collection sizes were listed as "unknown" in the tabulations by size of library.

The tables are organized according to the sequence of their respective questions in the survey instrument. Open-ended responses are discussed in the text of the report.

The data in the tables reflect the library environment in Virginia as of June 1985.

LIST OF TABLES

Page

Section 1 Library Resources and Activities

1A Funding Sources, by Type of Library B-1
1B Funding Sources, by Size of Library B-2
1C Funding Sources, by Region B-3

2A Organizational Structures, by Type of Library B-4
2A.1 Main Libraries with Branches, by Type of Library B-5
2A.2 Libraries and Branches in Library Groups, by Type of Library B-6

3A Service Without Restriction, by Type of Library B-7
3B Service Without Restriction, by Size of Library B-8
3C Service Without Restriction, by Region B-9

4A Check-out Locations, by Type of Library B-10

5A Centralized Acquisitions, by Type of Library B-11
5A.1 Decentralized Acquisitions, by Type of Library B-12

6A Centralized Cataloging, by Type of Library B-13
6A.1 Decentralized Cataloging, by Type of Library B-14

7A.1 Materials/Titles Held, by Type of Library B-15
7A.2 Materials/Volumes Held, by Type of Library B-16

8A.1 Materials/Titles Acquired, by Type of Library B-17
8A.2 Materials/Volumes Acquired, by Type of Library B-18

9A Status of Collection Development Activity, by Type of Library B-19

10A.1 Materials/Titles Cataloged, by Type of Library B-20
10A.2 Materials/Volumes Cataloged, by Type of Library B-21

11A Patrons, by Type of Library B-22

12A Check-out Statistics, by Type of Library B-23
12C Check-out Statistics, by Region B-24

13A Paid Staff, by Type of Library B-25

14A Volunteer Staff, by Type of Library B-26

15A ILL Requests Sent, by Type of Library B-27
15B ILL Requests Sent, by Size of Library B-28
15C ILL Requests Sent, by Region B-29

16A Items Borrowed on ILL, by Type of Library B-30
16B Items Borrowed on ILL, by Size of Library B-31
16C Items Borrowed on ILL, by Region B-32

LIST OF TABLES (CONTINUED)

Page

Section 1 Library Resources and Activities (continued)

17A Photocopies Received, by Type of Library B-33
17B Photocopies Received, by Size of Library B-34
17C Photocopies Received, by Region B-35

18A ILL Requests Received, by Type of Library B-36
18B ILL Requests Received, by Size of Library B-37
18C ILL Requests Received, by Region B-38

19A Items Loaned on ILL, by Type of Library B-39
19B Items Loaned on ILL, by Size of Library B-40
19C Items Loaned on ILL, by Region B-41

20A Photocopies Supplied, by Type of Library B-42
20B Photocopies Supplied, by Size of Library B-43
20C Photocopies Supplied, by Region B-44

Section 2 Library Cooperation and Networking

21A Networking Activities, by Type of Library B-45
21B Networking Activities, by Size of Library B-46
21C Networking Activities, by Region B-47

22A Perceived Benefits of Networking, by Type of Library B-48
22B Perceived Benefits of Networking, by Size of Library B-49
22C Perceived Benefits of Networking, by Region B-50

23A Unsuccessful Networking, by Type of Library B-51
23B Unsuccessful Networking, by Size of Library B-52
23C Unsuccessful Networking, by Region B-53

24A Importance of Network Services, by Type of Library B-54
24B Importance of Network Services, by Size of Library B-55
24C Importance of Network Services, by Region B-56

25A Importance of Issues on Cooperative Activities for Inclusion in Formal Networking Plan, by Type of Library B-57
25B Importance of Issues on Cooperative Activities for Inclusion in Formal Networking Plan, by Size of Library B-58
25C Importance of Issues on Cooperative Activities for Inclusion in Formal Networking Plan, by Region B-59

26A Effects of Development of a Formal Networking Plan on Existing Networks, by Type of Library B-60
26B Effects of Development of a Formal Networking Plan on Existing Networks, by Size of Library B-61
26C Effects of Development of a Formal Networking Plan on Existing Networks, by Region B-62

LIST OF TABLES (CONTINUED)

Page

Section 2 Library Cooperation and Networking (continued)

27A Conditions that Encourage Cooperation, by Type of Library B-63
27B Conditions that Encourage Cooperation, by Size of Library B-64
27C Conditions that Encourage Cooperation, by Region B-65

28A Conditions that Inhibit Cooperation, by Type of Library B-66
28B Conditions that Inhibit Cooperation, by Size of Library B-67
28C Conditions that Inhibit Cooperation, by Region B-68

29A Readiness to Implement Own Automation Activities, by Type of Library B-69
29B Readiness to Implement Own Automation Activities, by Size of Library B-70
29C Readiness to Implement Own Automation Activities, by Region B-71

30A Readiness to Engage in Automated Networking Activities, by Type of Library B-72
30B Readiness to Engage in Automated Networking Activities, by Size of Library B-73
30C Readiness to Engage in Automated Networking Activities, by Region B-74

Section 3 General Automation

31A Current Use of Automation, by Type of Library B-75
31B Current Use of Automation, by Size of Library B-76
31C Current Use of Automation, by Region B-77

32A Previous Use of Automation, by Type of Library B-78
32B Previous Use of Automation, by Size of Library B-79
32C Previous Use of Automation, by Region B-80

33A Automation of Acquisitons, by Type of Library B-81
33B Automation of Acquisitons, by Size of Library B-82
33C Automation of Acquisitons, by Region B-83

34A Automation of Cataloging, by Type of Library B-84
34B Automation of Cataloging, by Size of Library B-85
34C Automation of Cataloging, by Region B-86

35A Automation of Retrospective Conversion, by Type of Library B-87
35B Automation of Retrospective Conversion, by Size of Library B-88
35C Automation of Retrospective Conversion, by Region B-89

36A Automation of Catalog Maintenance, by Type of Library B-90
36B Automation of Catalog Maintenance, by Size of Library B-91
36C Automation of Catalog Maintenance, by Region B-92

LIST OF TABLES (CONTINUED)

Page

Section 3 General Automation

37A Automation of the Public Access Catalog, by Type of Library B-93
37B Automation of the Public Access Catalog, by Size of Library B-94
37C Automation of the Public Access Catalog, by Region B-95

38A Automation of Circulation, by Type of Library B-96
38B Automation of Circulation, by Size of Library B-97
38C Automation of Circulation, by Region B-98

39A Automation of Serials Control, by Type of Library B-99
39B Automation of Serials Control, by Size of Library B-100
39C Automation of Serials Control, by Region B-101

40A Automation of Reference With Use of Online Databases, by Type of Library B-102
40B Automation of Reference With Use of Online Databases, by Size of Library B-103
40C Automation of Reference With Use of Online Databases, by Region B-104

41A Automation of Interlibrary Loan, by Type of Library B-105
41B Automation of Interlibrary Loan, by Size of Library B-106
41C Automation of Interlibrary Loan, by Region B-107

42A Automation of Document Delivery Functions, by Type of Library B-108
42B Automation of Document Delivery Functions, by Size of Library B-109
42C Automation of Document Delivery Functions, by Region B-110

43A Automation of Booking/Scheduling, by Type of Library B-111
43B Automation of Booking/Scheduling, by Size of Library B-112
43C Automation of Booking/Scheduling, by Region B-113

44A Automation of Administrative Support Functions, by Type of Library B-114
44B Automation of Administrative Support Functions, by Size of Library B-115
44C Automation of Administrative Support Functions, by Region B-116

45A Availability of Microcomputers for Public Use, by Type of Library B-117
45B Availability of Microcomputers for Public Use, by Size of Library B-118
45C Availability of Microcomputers for Public Use, by Region B-119

LIST OF TABLES (CONTINUED)

Page

Section 3 General Automation (continued)

46A Automation of Other Functions, by Type of Library B-120
46B Automation of Other Functions, by Size of Library B-121
46C Automation of Other Functions, by Region B-122

47A Benefits of Current Automation, by Type of Library B-123
47B Benefits of Current Automation, by Size of Library B-124
47C Benefits of Current Automation, by Region B-125

48A Benefits of Automated Networking, by Type of Library B-126
48B Benefits of Automated Networking, by Size of Library B-127
48C Benefits of Automated Networking, by Region B-128

49A Importance of Issues on Automated Systems/Networks for Inclusion in Formal Networking Plan, by Type of Library B-129
49B Importance of Issues on Automated Systems/Networks for Inclusion in Formal Networking Plan, by Size of Library B-130
49C Importance of Issues on Automated Systems/Networks for Inclusion in Formal Networking Plan, by Region B-131

50A Automation Concerns, by Type of Library B-132
50B Automation Concerns, by Size of Library B-133
50C Automation Concerns, by Region B-134

51A Preferred Role in Statewide Plan, by Type of Library B-135
51B Preferred Role in Statewide Plan, by Size of Library B-136
51C Preferred Role in Statewide Plan, by Region B-137

52A Conditions that Encourage Development of Automated Systems and Networks, by Type of Library B-138
52B Conditions that Encourage Development of Automated Systems and Networks, by Size of Library B-139
52C Conditions that Encourage Development of Automated Systems and Networks, by Region B-140

53A Libraries with Policies that May Discourage Participation in Automation Activities, by Type of Library B-141
53B Libraries with Policies that May Discourage Participation in Automation Activities, by Size of Library B-142
53C Libraries with Policies that May Discourage Participation in Automation Activities, by Region B-143

54A Libraries Citing Other Factors that May Discourage Participation in Automation Activities, by Type of Library B-144
54B Libraries Citing Other Factors that May Discourage Participation in Automation Activities, by Size of Library B-145
54C Libraries Citing Other Factors that May Discourage Participation in Automation Activities, by Region B-146

LIST OF TABLES (CONTINUED)

Page

Section 4 Details of Automated Systems

55A Data Communications Capabilities, by Type of Library B-147
55B Data Communications Capabilities, by Size of Library B-148
55C Data Communications Capabilities, by Region B-149

56A Title Records in Machine-readable Form, by Type of Library B-150

57A Book/Monograph Title Records in Machine-readable Form, by Type of Library B-151

58A Serial Title Records in Machine-readable Form, by Type of Library B-152

59A Record/Audiocassette Title Records in Machine-readable Form, by Type of Library B-153

60A Film/Slide/Kit Title Records in Machine-readable Form, by Type of Library B-154

61A Government Document Title Records in Machine-readable Form, by Type of Library B-155

62A Technical Report Title Records in Machine-readable Form, by Type of Library B-156

63A Microform Title Records in Machine-readable Form, by Type of Library B-157

64A Computer Software Title Records in Machine-readable Form, by Type of Library B-158

65A Other Title Records in Machine-readable Form, by Type of Library B-159

66A Patron Records in Machine-readable Form, by Type of Library B-160
66B Patron Records in Machine-readable Form, by Size of Library B-161
66C Patron Records in Machine-readable Form, by Region B-162

67A Libraries with Communicating Automated Systems, by Type of Library B-163
67B Libraries with Communicating Automated Systems, by Size of Library B-164
67C Libraries with Communicating Automated Systems, by Region B-165

68A Satisfaction with Automated Systems, by Type of Library B-166
68B Satisfaction with Automated Systems, by Size of Library B-167
68C Satisfaction with Automated Systems, by Region B-168

LIST OF TABLES (CONTINUED)

Page

Section 4 Details of Automated Systems (continued)

69A Feasibility of "Hosting" Other Libraries' Databases, by Type of Library B-169
69B Feasibility of "Hosting" Other Libraries' Databases, by Size of Library B-170
69C Feasibility of "Hosting" Other Libraries' Databases, by Region B-171

70A Potential "Hosting" Problems, by Type of Library B-172
70B Potential "Hosting" Problems, by Size of Library B-173
70C Potential "Hosting" Problems, by Region B-174

71A Readiness for "Hosting", by Type of Library B-175
71B Readiness for "Hosting", by Size of Library B-176
71C Readiness for "Hosting", by Region B-177

SECTION 1

LIBRARY RESOURCES AND ACTIVITIES

TABLE 1A

Funding Sources, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WITH PRIMARY FUNDING FROM SPECIFIC SOURCES, BY TYPE OF LIBRARY, 1985

	Primary Source of Funding									
	Federal Government		State Government		Local Government		Private Sources		Total	
Type of Library	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
Public	-	-	6	8	71	90	2	3	79	101
Institutional	6	25	18	75	-	-	-	-	24	100
Academic										
State Supported	1	5	18	95	-	-	-	-	19	100
Community College	-	-	19	90	-	-	2	10	21	100
Private University & College	-	-	-	-	-	-	25	100	25	100
School	10	12	10	12	65	76	1	1	86	101
Special										
State & Local Government	-	-	7	78	1	11	1	11	9	99
Federal Government	18	100	-	-	-	-	-	-	18	100
Other	4	9	-	-	1	2	38	88	43	99
Unknown	-	-	-	-	3	75	1	25	4	100
All	39	12	78	24	141	43	70	21	328	100

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 1B

Funding Sources, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WITH PRIMARY FUNDING FROM SPECIFIC SOURCES, BY SIZE OF LIBRARY, 1985

	Primary Source of Funding									
	Federal Government		State Government		Local Government		Private Sources		Total	
Size of Library (Volumes/items)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
<10,000	11	21	16	31	11	21	14	27	52	100
10,000 - 99,999	18	13	27	19	65	46	31	22	141	100
100,000 - 500,000	3	5	13	20	34	52	15	23	65	100
> 500,000	-	-	11	46	9	38	4	17	24	101
Unknown	7	15	11	24	22	48	6	13	46	100
All	39	12	78	24	141	43	70	21	328	100

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 1C

Funding Sources, by Region

NUMBER AND PROPORTION OF LIBRARIES WITH PRIMARY FUNDING FROM SPECIFIC SOURCES,
BY REGION, 1985

Region	Primary Source of Funding								Total	
	Federal Government		State Government		Local Government		Private Sources			
	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
Northern	10	20	5	10	18	36	17	34	50	100
Northwest	3	6	14	26	26	47	12	22	55	101
Piedmont	8	13	18	28	21	33	17	27	64	101
Southern	4	8	12	24	24	48	10	20	50	100
Southwest	5	8	15	29	25	48	7	15	52	100
Tidewater	9	17	14	25	27	47	7	11	57	100
All	39	12	78	23	141	43	70	21	328	99

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 2A

Organizational Structures, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WITH SPECIFIC ORGANIZATIONAL STRUCTURES,
BY TYPE OF LIBRARY, 1985

Type of Library	Organizational Structure									
	Single Library		Main with Branches		Group of Libraries		Other		Total	
	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
Public	39	50	34	44	4	5	1	1	78	100
Institutional	20	83	3	13	1	4	-	-	24	100
Academic										
State Supported	13	68	6	32	-	-	-	-	19	100
Community College	15	71	2	10	4	19	-	-	21	100
Private University & College	21	84	1	4	2	8	1	4	25	100
School	13	15	-	-	73	85	-	-	86	100
Special										
State & Local Government	9	100	-	-	-	-	-	-	9	100
Federal Government	13	72	4	22	1	6	-	-	18	101
Other	37	84	6	14	-	-	1	2	44	100
Unknown	1	25	3	75	-	-	-	-	4	100
All	181	55	59	18	85	26	3	1	328	100

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 2A.1

Main Libraries with Branches, by Type of Library

AVERAGE NUMBER OF BRANCH LIBRARIES FOR MAIN LIBRARIES WITH BRANCHES, BY TYPE OF LIBRARY, 1985

Type of Library	Average Number of Branch Libraries
Public	3
Institutional	6
Academic	
State Supported	4
Community College	1
Private University & College	3
School	7
Special	
State & Local Government	-
Federal Government	1
Other	3
Unknown	3
All	3

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 2A.2

Libraries and Branches in Library Groups, by Type of Library

AVERAGE NUMBER OF LIBRARIES AND BRANCH LIBRARIES
FOR LIBRARIES ORGANIZED AS GROUPS OF LIBRARIES,
BY TYPE OF LIBRARY, 1985

Type of Library	Average Number of Libraries	Average Number of Branches
Public	5	3
Institutional	-	-
Academic		
State Supported	-	-
Community College	3	-
Private University & College	1	3
School	17	-
Special		
State & Local Government	-	-
Federal Government	2	-
Other	-	-
Unknown	-	-
All	15	-

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 3A

Service Without Restriction, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE COLLECTIONS AND SERVICES ARE AVAILABLE FOR USE WITHOUT RESTRICTIONS, BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries	Proportion (%)
Public	43	54
Institutional	15	63
Academic		
State-Supported	8	42
Community College	14	67
Private University & College	10	40
School	43	50
Special		
State & Local Government	1	11
Federal Government	3	17
Other	9	20
Unknown	1	25
All	147	45

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 3B

Service Without Restriction, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE COLLECTIONS AND SERVICES ARE AVAILABLE FOR USE WITHOUT RESTRICTIONS, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Number of Libraries	Proportion (%)
<10,000	21	41
10,000-99,999	68	48
100,000-500,000	30	46
>500,000	7	30
Unknown	21	49
All	147	45

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 3C

Service Without Restriction, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE COLLECTIONS AND SERVICES ARE AVAILABLE FOR USE WITHOUT RESTRICTIONS, BY REGION, 1985

Region	Number of Libraries	Proportion (%)
Northern	11	20
Northwest	33	60
Piedmont	30	47
Southern	23	45
Southwest	19	40
Tidewater	31	54
All	147	45

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 4A

Check-out Locations, by Type of Library

AVERAGE NUMBER OF CIRCULATION CHECK-OUT LOCATIONS, BY TYPE OF LIBRARY, 1985

Type of Library	Average Number of Check-out Locations
Public	4
Institutional	1
Academic	
State Supported	4
Community College	1
Private University & College	2
School	12
Special	
State & Local Government	3
Federal Government	2
Other	1
Unknown	3
All	5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 5A

Centralized Acquisitions, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WITH CENTRALIZED
ACQUISITIONS PROCESSING, BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries	Proportion (%)
Public	59	91
Institutional	20	91
Academic		
State Supported	14	78
Community College	19	100
Private University & College	21	91
School	25	40
Special		
State & Local Government	7	100
Federal Government	12	86
Other	28	90
Unknown	4	100
All	209	79

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 5A.1

Decentralized Acquisitions, by Type of Library

AVERAGE NUMBER OF SEPARATE ACQUISITIONS UNITS FOR LIBRARIES WITH DECENTRALIZED ACQUISITIONS PROCESSING, BY TYPE OF LIBRARY, 1985

Type of Library	Average Number of Separate Acquisitions Units
Public	3
Institutional	5
Academic	
State Supported	2
Community College	-
Private University & College	3
School	12
Special	
State & Local Government	-
Federal Government	1
Other	-
Unknown	-
All	9

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 6A

Centralized Cataloging, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WITH CENTRALIZED CATALOGING UNITS, BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries	Proportion (%)
Public	63	97
Institutional	19	90
Academic		
State Supported	16	89
Community College	18	95
Private University & College	20	87
School	20	33
Special		
State & Local Government	7	100
Federal Government	13	93
Other	31	100
Unknown	4	100
All	211	80

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 6A.1

Decentralized Cataloging, by Type of Library

AVERAGE NUMBER OF SEPARATE CATALOGING UNITS FOR LIBRARIES WITH DECENTRALIZED CATALOGING, BY TYPE OF LIBRARY, 1985

Type of Library	Average Number of Separate Cataloging Units
Public	4
Institutional	2
Academic	
State Supported	2
Community College	3
Private University & College	3
School	11
Special	
State & Local Government	-
Federal Government	7
Other	-
Unknown	-
All	9

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 7A.1

Materials/Titles Held, by Type of Library

NUMBER AND PROPORTION OF TITLES HELD BY ALL LIBRARIES, BY
VARIOUS TYPES OF MATERIALS, BY TYPE OF LIBRARY, 1985

Type of Library	Types of Materials: Books/ Monographs (#)	(%)	Serials (#)	(%)	Records/ Audio Cassettes (#)	(%)	Films, Slides, Kits, etc. (#)	(%)	Government Documents (#)	(%)	Technical Reports (#)	(%)	Microforms (#)	(%)	Computer Software (#)	(%)	Other (#)	(%)	Total (#)
Public	4,426,739	80	67,829	1	160,285	3	38,915	1	236,801	4	30,291	1	191,454	3	281	-	414,184	7	5,566,789
Institutional	119,698	77	6,169	4	7,237	5	10,965	7	86	-	40	-	10,536	7	44	-	791	1	155,566
Academic																			
State-Supported	3,860,553	83	70,486	2	63,313	1	56,192	1	150,371	3	-	-	399,806	9	4,334	-	69,145	1	4,674,200
Community College	611,398	79	7,637	1	32,776	4	67,486	9	12,000	2	-	-	26,640	3	273	-	15,246	2	773,456
Private University & College	1,919,236	69	24,179	1	92,129	3	52,491	2	313,260	11	950	-	241,353	9	262	-	150,462	5	2,794,322
School	2,658,091	68	8,705	-	167,246	4	172,085	4	1,280	-	23	-	2,854	-	4,597	-	911,824	23	3,926,705
Special																			
State & Local Government	55,155	74	9,367	13	240	-	799	1	850	1	200	-	990	1	-	-	6,794	9	74,395
Federal Government	1,376,464	50	40,519	1	3,559	-	305,556	11	59,225	2	10	-	304,990	11	7,788	-	675,001	25	2,773,112
Other	335,262	12	8,312	-	7,965	-	4,080	-	566,306	20	103,007	4	633,418	22	3	-	1,227,165	43	2,885,528
Unknown	166,325	94	596	-	3,500	2	595	-	-	-	-	-	5,640	3	56	-	-	-	176,712
All	15,528,921	65	243,799	1	538,250	2	709,174	3	1,340,179	6	134,521	1	1,817,691	8	17,638	-	3,470,612	15	23,800,785

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 7A.2

Materials/Volumes Held, by Type of Library

NUMBER AND PROPORTION OF VOLUMES HELD BY ALL LIBRARIES,
BY VARIOUS TYPES OF MATERIALS, BY TYPE OF LIBRARY, 1985

	Types of Materials																		
	Books/ Monographs		Serials		Records/ Audio Cassettes		Films, Slides, Kits, etc.		Government Documents		Technical Reports		Microforms		Computer Software		Other		Total
Type of Library	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)
Public	9,755,403	73	1,303,533	10	285,719	2	52,338	-	582,692	4	40,241	-	831,872	6	303	-	445,324	3	13,297,425
Institutional	92,621	74	1,796	1	3,667	3	8,568	7	160	-	55	-	14,570	12	70	-	3,348	3	124,855
Academic																			
State-Supported	7,918,622	23	1,085,492	3	63,001	-	420,766	1	3,285,428	10	215,585	1	9,665,356	28	421	-	11,570,631	34	34,225,302
Community College	1,077,513	64	68,953	4	47,348	3	178,888	11	26,096	1	-	-	275,468	16	386	-	8,270	1	1,683,022
Private University & College	2,650,418	56	366,352	8	59,557	1	60,491	1	430,815	9	2,000	-	995,007	21	268	-	151,357	3	4,716,265
School	6,265,226	67	25,423	-	569,265	6	531,467	6	22,737	-	327	-	281,074	3	12,894	-	1,705,785	18	9,414,198
Special																			
State & Local Government	406,105	10	24,350	1	81	-	603	-	800	-	200	-	7,247	-	-	-	3,810,200	90	4,249,586
Federal Government	282,728	56	64,329	13	1,404	-	3,650	1	100,075	20	10	-	35,476	7	7,788	2	8,000	2	503,460
Other	368,507	46	76,116	9	17,026	2	4,014	1	54,526	7	57,384	7	99,678	12	2	-	130,680	16	807,933
Unknown	404,309	93	8,649	2	8,389	2	1,680	-	-	-	3,889	1	6,916	2	62	-	104	-	433,998
All	29,221,552	42	3,024,993	4	1,055,457	2	1,262,465	2	4,503,329	6	319,691	-	12,212,664	18	22,194	-	17,833,699	26	69,456,044

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 8A.1

Materials/Titles Acquired, by Type of Library

NUMBER AND PROPORTION OF TITLES ACQUIRED BY ALL LIBRARIES, BY VARIOUS TYPES OF MATERIALS, BY TYPE OF LIBRARY, 1985

Type of Library	Types of Materials																			Total
	Books/ Monographs		Serials		Records/ Audio Cassettes		Films, Slides, Kits, etc.		Government Documents		Technical Reports		Microforms		Computer Software		Other			
	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)		(#)
Public	277,592	68	9,238	2	17,759	4	3,507	1	26,602	7	492	-	29,884	7	179	-	45,746	11		410,999
Institutional	15,990	57	4,889	17	638	2	1,382	5	40	-	1	-	3,304	12	65	-	1,800	6		28,109
Academic																				
State-Supported	93,093	39	3,595	2	3,100	1	1,649	1	45,424	19	-	-	87,448	37	4,239	2	1,175	1		239,723
Community College	29,200	75	2,370	6	440	1	880	2	350	1	-	-	5,438	14	94	-	60	-		38,832
Private University & College	62,812	49	7,947	6	2,029	2	2,075	2	33,001	26	60	-	20,079	16	133	-	29	-		128,165
School	61,402	71	7,054	8	3,942	5	5,905	7	7	-	-	-	246	-	7,114	8	577	1		86,247
Special																				
State & Local Government	915	28	1,471	45	21	1	35	1	153	5	415	13	99	3	-	-	186	6		3,295
Federal Government	9,182	55	541	3	315	2	126	1	402	2	1	-	6,028	36	-	-	1	-		16,596
Other	24,593	38	2,652	4	196	-	3	-	2,317	4	5,352	8	10,564	17	1	-	18,366	29		64,044
Unknown	18,073	98	17	-	265	1	29	-	-	-	-	-	66	-	80	-	-	-		18,530
All	592,852	57	39,774	4	28,705	3	15,591	2	108,296	11	6,321	1	163,156	16	11,905	1	67,940	7		1,034,540

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 8A.2

Materials/Volumes Acquired, by Type of Library

NUMBER AND PROPORTION OF VOLUMES ACQUIRED BY ALL LIBRARIES,
BY VARIOUS TYPES OF MATERIALS, BY TYPE OF LIBRARY, 1985

	Types of Materials																		
	Books/ Monographs		Serials		Records/ Audio Cassettes		Films, Slides, Kits, etc.		Government Documents		Technical Reports		Microforms		Computer Software		Other		Total
Type of Library	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)
Public	754,248	69	30,289	3	31,888	3	6,964	1	48,096	4	507	-	105,977	10	1,200	-	115,253	11	1,094,422
Institutional	16,320	14	2,520	2	88,244	74	1,182	1	3	-	4	-	8,500	7	74	-	2,400	2	119,247
Academic																			
State-Supported	202,917	18	30,338	3	990	-	826	-	233,577	20	2,203	-	554,081	48	413	-	119,648	11	1,144,993
Community College	38,688	50	6,556	9	968	1	8,556	11	380	1	-	-	21,803	28	251	-	170	-	77,372
Private University & College	90,572	43	15,548	7	2,041	1	2,078	1	41,391	20	550	-	58,621	28	136	-	34	-	210,971
School	142,966	68	8,509	4	16,706	8	10,898	5	6	-	-	-	26,203	12	5,632	3	802	3	211,722
Special																			
State & Local Government	4,817	94	9	-	26	1	35	1	80	2	90	2	-	-	-	-	50	1	5,107
Federal Government	8,810	22	4,714	12	213	1	4,600	12	2	-	1	-	21,227	54	-	-	1	-	39,568
Other	23,341	56	5,570	13	272	1	1	-	1,183	3	4,311	10	6,707	16	-	-	431	1	41,816
Unknown	29,956	93	1,659	5	318	1	29	-	-	-	-	-	211	1	86	-	-	-	32,259
All	1,312,635	44	105,712	4	141,666	5	35,169	1	324,718	11	7,666	-	803,330	27	7,792	-	238,789	8	2,977,477

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 9A

Status of Collection Development Activity, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WITH COLLECTION DEVELOPMENT ACTIVITY
AT VARIOUS LEVELS, BY TYPE OF LIBRARY, 1985

Type of Library	Fairly steady level of annual acquisitions (#)	(%)	Major effort to establish or build up the collection (#)	(%)	Other (#)	(%)	Total (#)	(%)
Public	49	78	11	17	3	5	63	100
Institutional	12	57	9	43	-	-	21	100
Academic								
State Supported	13	76	3	18	1	6	17	100
Community College	15	79	1	5	3	16	19	100
Private University & College	20	87	2	9	1	4	23	100
School	49	86	8	14	-	-	57	100
Special								
State & Local Government	7	100	-	-	-	-	7	100
Federal Government	11	92	-	-	1	8	12	100
Other	21	78	3	11	3	11	27	100
Unknown	4	100	-	-	-	-	4	100
All	201	80	37	15	12	5	250	100

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 10A.1

Materials/Titles Cataloged, by Type of Library

TOTAL NUMBER OF TITLES CATALOGED BY LIBRARIES, BY VARIOUS TYPES OF MATERIALS,
BY TYPE OF LIBRARY, 1985

	Types of Materials																		
Type of Library	Books/ Monographs (#)	(%)	Serials (#)	(%)	Records/ Audio Cassettes (#)	(%)	Films, Slides, Kits, etc. (#)	(%)	Government Documents (#)	(%)	Technical Reports (#)	(%)	Microform (#)	(%)	Computer Software (#)	(%)	Other (#)	(%)	Total (#)
Public	236,544	88	1,217	-	16,790	6	3,339	1	471	-	12	-	6,667	2	26	-	2,474	1	267,540
Institutional	10,530	67	3,739	24	845	5	325	2	-	-	-	-	-	-	56	-	300	2	15,795
Academic																			
State-Supported	138,943	68	6,569	3	3,145	2	300	-	1,173	1	507	-	42,910	21	4	-	9,687	5	203,328
Community College	25,935	84	436	1	2,046	7	1,741	6	60	-	-	-	306	1	79	-	379	1	30,982
Private University & College	83,859	87	4,378	5	4,195	4	774	1	469	-	54	-	2,901	3	95	-	-	-	96,725
School	52,753	78	1,819	3	1,424	2	4,726	7	9	-	-	-	518	1	6,081	9	695	1	68,025
Special																			
State & Local Government	765	78	25	3	15	2	10	1	80	8	80	8	2	-	-	-	5	1	982
Federal Government	15,896	82	1,075	6	149	1	126	1	400	2	-	-	111	1	-	-	1,560	8	19,317
Other	16,245	82	307	2	80	-	1	-	277	1	1,652	8	1,250	6	-	-	66	-	19,878
Unknown	17,701	98	-	-	215	1	66	-	-	-	-	-	-	-	80	-	-	-	18,062
All	599,171	81	19,565	3	28,904	4	11,408	2	2,939	-	2,305	-	54,665	7	6,421	1	15,166	2	740,544

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 10A.2

Materials/Volumes Cataloged, by Type of Library

TOTAL NUMBER OF VOLUMES CATALOGED BY LIBRARIES, BY VARIOUS TYPES OF MATERIALS, BY TYPE OF LIBRARY, 1985

	Types of Materials																		
Type of Library	Books/ Monographs		Serials		Records/ Audio Cassettes		Films, Slides, Kits, etc.		Government Documents		Technical Reports		Microform		Computer Software		Other		Total
	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)
Public	702,735	89	4,699	1	23,626	3	7,109	1	537	-	12	-	50,710	6	26	-	3,708	-	793,162
Institutional	8,244	84	46	-	255	3	213	2	3	-	4	-	200	2	70	1	749	8	9,784
Academic																			
State-Supported	225,843	29	43,571	6	20,984	3	2,499	-	131,594	17	2,203	-	234,586	30	10	-	120,047	15	781,337
Community College	32,423	61	2,104	4	2,098	4	7,077	13	60	-	-	-	8,830	17	95	-	447	1	53,134
Private University & College	81,784	84	4,210	4	4,276	4	791	1	3,715	4	55	-	2,596	3	95	-	-	-	97,522
School	90,542	63	4,073	3	5,419	4	11,993	8	9	-	-	-	27,358	19	3,347	2	990	1	143,731
Special																			
State & Local Government	1,925	91	5	-	20	1	12	1	80	4	80	4	-	-	-	-	-	-	2,122
Federal Government	4,664	94	-	-	217	4	100	2	-	-	-	-	1	-	-	-	-	-	4,982
Other	15,719	82	201	1	160	1	1	-	275	1	1,595	8	1,014	5	-	-	290	2	19,255
Unknown	29,070	99	-	-	254	1	66	-	-	-	-	-	-	-	80	-	-	-	29,470
All	1,192,949	62	58,909	3	57,309	3	29,861	2	136,273	7	3,949	-	325,295	17	3,723	-	126,231	7	1,934,499

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 11A

Patrons, by Type of Library

TOTAL NUMBER OF REGISTERED AND ESTIMATED NON-REGISTERED PATRONS AT ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

Type of Library	Registered Patrons	Estimated Non-Registered Patrons
Public	2,209,860	2,097,184
Institutional	2,264	5,063
Academic		
State-Supported	149,421	150,621
Community College	78,725	77,725
Private University & College	12,090	27,781
School	279,212	419,614
Special		
State & Local Government	1,614	4,473
Federal Government	23,186	26,636
Other	4,095	37,199
Unknown	62,855	62,855
All	2,823,322	2,909,151

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 12A

Check-out Statistics, by Type of Library

NUMBER OF ITEMS CHECKED OUT FROM LIBRARIES
DURING THE LAST ANNUAL REPORTING PERIOD, BY TYPE OF LIBRARY, 1985

Type of Library	Items Checked Out During Last Annual Reporting Period
Public	26,646,069
Institutional	1,050,304
Academic	
State Supported	3,029,185
Community College	676,840
Private University & College	599,695
School	20,879,709
Special	
State & Local Government	5,235
Federal Government	328,124
Other	201,635
Unknown	952,537
All	54,369,333

SOURCE: King Research, Inc., Survey of Virginia Libraries (n=329)

TABLE 12C

Check-out Statistics, by Region

NUMBER OF ITEMS CHECKED OUT FROM LIBRARIES
DURING THE LAST ANNUAL REPORTING PERIOD, BY REGION, 1985

Region	Items Checked Out During Last Annual Reporting Period
Northern	24,579,388
Northwest	4,677,474
Piedmont	6,751,608
Southern	4,100,896
Southwest	4,894,384
Tidewater	9,365,555
All	54,369,305

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 13A

Paid Staff, by Type of Library

TOTAL NUMBER OF PAID PROFESSIONAL AND OTHER STAFF IN LIBRARIES
DURING THE LAST ANNUAL REPORTING PERIOD, BY TYPE OF LIBRARY, 1985

Type of Library	Total Number of Paid Professional Staff	Total Number of Paid Professional FTEs	Total Number of Other Paid Staff	Total Number of Other Paid FTEs
Public	458	424.0	1,558	1,092.7
Institutional	26	3.5	10	5.0
Academic				
State Supported	222	236.2	522	581.7
Community College	90	77.4	87	73.0
Private University & College	106	80.6	203	122.6
School	825	272.7	579	103.9
Special				
State & Local Government	15	1.0	7	2.5
Federal Government	60	54.0	93	88.6
Other	67	33.9	34	37.8
Unknown	9	7.0	94	69.5
All	1,878	1,187.0	3,187	2,172.0

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 14A

Volunteer Staff, by Type of Library

TOTAL AND AVERAGE NUMBER OF VOLUNTEER STAFF HOURS SERVED IN LIBRARIES DURING THE LAST ANNUAL REPORTING PERIOD, BY TYPE OF LIBRARY, 1985

Type of Library	Total Number of of Volunteer Staff Hours	Average Number of Volunteer Staff Hours
Public	122,630	2,043
Institutional	2,480	145
Academic		
State Supported	2,487	155
Community College	974	57
Private University & College	9,510	475
School	55,193	1,576
Special		
State & Local Government	108	21
Federal Government	2,642	220
Other	6,840	253
Unknown	3,458	1,152
All	206,322	973

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 15A

ILL Requests Sent, by Type of Library

TOTAL AND AVERAGE NUMBER OF INTERLIBRARY LOAN REQUESTS SENT BY VIRGINIA LIBRARIES TO OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY TYPE OF LIBRARY, 1985

Type of Library	Number of ILL Requests to Libraries in Virginia		Number of ILL Requests to Libraries Outside Virginia	
	Total	Average Per Library	Total	Average Per Library
Public	16,357	259	4,824	86
Institutional	2,119	105	9	-
Academic				
State-Supported	14,778	821	14,570	857
Community College	2,472	130	384	21
Private University & College	7,764	369	2,145	107
School	1,303	28	53	1
Special				
State & Local Government	66	11	150	25
Federal Government	6,933	693	4,310	391
Other	2,481	88	7,494	267
Unknown	265	132	2	2
All	54,538	235	33,941	155

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 15B

ILL Requests Sent, by Size of Library

TOTAL AND AVERAGE NUMBER OF INTERLIBRARY LOAN REQUESTS SENT BY VIRGINIA LIBRARIES TO OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY SIZE OF LIBRARY, 1985

	Number of ILL Requests to Libraries in Virginia		Number of ILL Requests to Libraries Outside Virginia	
Size of Library (Volumes/items)	Total	Average Per Library	Total	Average Per Library
<10,000	3,360	88	2,159	65
10,000-99,999	17,229	164	5,023	49
100,000-500,000	17,404	362	11,490	273
>500,000	15,227	1,015	15,020	1,072
Unknown	1,318	50	249	9
All	54,538	235	33,941	155

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 15C

ILL Requests Sent, by Region

TOTAL AND AVERAGE NUMBER OF INTERLIBRARY LOAN REQUESTS SENT BY VIRGINIA LIBRARIES TO OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY REGION, 1985

	Number of ILL Requests to Libraries in Virginia		Number of ILL Requests to Libraries Outside Virginia	
Region	Total	Average Per Library	Total	Average Per Library
Northern	6,434	238	10,561	377
Northwest	8,123	193	6,987	158
Piedmont	11,840	263	8,824	215
Southern	4,504	125	613	19
Southwest	8,139	198	4,882	131
Tidewater	15,498	378	2,074	57
All	54,538	235	33,941	155

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 16A

Items Borrowed on ILL, by Type of Library

TOTAL AND AVERAGE NUMBER OF ITEMS SUCCESSFULLY BORROWED BY VIRGINIA LIBRARIES FROM OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY TYPE OF LIBRARY, 1985

	Number of Items Borrowed from Libraries in Virginia		Number of Items Borrowed from Libraries Outside Virginia	
Type of Library	Total	Average Per Library	Total	Average Per Library
Public	13,881	213	4,122	68
Institutional	1,953	102	9	-
Academic				
State-Supported	9,325	548	9,166	539
Community College	1,511	83	153	9
Private University & College	3,797	165	1,510	71
School	2,543	52	30	-
Special				
State & Local Government	37	7	129	21
Federal Government	1,663	127	788	65
Other	4,344	144	1,708	56
Unknown	487	121	62	20
All	39,541	163	17,677	76

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 16B

Items Borrowed on ILL, by Size of Library

TOTAL AND AVERAGE NUMBER OF ITEMS SUCCESSFULLY BORROWED BY VIRGINIA LIBRARIES FROM OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY SIZE OF LIBRARY, 1985

	Number of Items Borrowed from Libraries in Virginia		Number of Items Borrowed from Libraries Outside Virginia	
Size of Library (Volumes/items)	Total	Average Per Library	Total	Average Per Library
<10,000	2,926	77	804	22
10,000-99,999	9,018	81	885	8
100,000-500,000	12,009	250	6,035	131
>500,000	10,714	630	9,633	566
Unknown	4,874	168	320	11
All	39,541	163	17,677	76

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 16C

Items Borrowed on ILL, by Region

TOTAL AND AVERAGE NUMBER OF ITEMS SUCCESSFULLY BORROWED BY VIRGINIA LIBRARIES FROM OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY REGION, 1985

Region	Number of Items Borrowed from Libraries in Virginia		Number of Items Borrowed from Libraries Outside Virginia	
	Total	Average Per Library	Total	Average Per Library
Northern	7,176	239	5,741	173
Northwest	7,288	165	3,848	91
Piedmont	7,584	158	3,411	79
Southern	3,663	99	331	9
Southwest	6,951	169	2,117	57
Tidewater	6,879	163	2,229	55
All	39,541	163	17,677	76

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 17A

Photocopies Received, by Type of Library

TOTAL AND AVERAGE NUMBER OF PHOTOCOPIED ITEMS RECEIVED BY VIRGINIA
LIBRARIES FROM OTHER LIBRARIES IN AND OUTSIDE VIRGINIA
DURING THE LAST ANNUAL REPORTING PERIOD,
BY TYPE OF LIBRARY, 1985

	Number of Photocopied Items From Libraries in Virginia		Number of Photocopied Items From Libraries Outside Virginia	
Type of Library	Total	Average Per Library	Total	Average Per Library
Public	1,022	17	109	1
Institutional	528	29	1	-
Academic				
State-Supported	3,043	217	3,121	222
Community College	622	36	45	2
Private University & College	4,986	237	1,122	53
School	731	15	115	2
Special				
State & Local Government	28	5	2,639	439
Federal Government	4,675	425	876	87
Other	1,324	42	4,728	157
Unknown	7	3	-	-
All	16,966	76	12,756	57

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 17B

Photocopies Received, by Size of Library

TOTAL AND AVERAGE NUMBER OF PHOTOCOPIED ITEMS RECEIVED BY VIRGINIA LIBRARIES FROM OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY SIZE OF LIBRARY, 1985

	Number of Photocopied Items From Libraries in Virginia		Number of Photocopied Items From Libraries Outside Virginia	
Size of Library (Volumes/items)	Total	Average Per Library	Total	Average Per Library
<10,000	892	26	4,351	124
10,000-99,999	8,184	79	1,006	9
100,000-500,000	3,281	72	3,621	80
>500,000	3,601	257	3,301	235
Unknown	1,008	38	477	17
All	16,966	76	12,756	57

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 17C

Photocopies Received, by Region

TOTAL AND AVERAGE NUMBER OF PHOTOCOPIED ITEMS RECEIVED BY VIRGINIA LIBRARIES FROM OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY REGION, 1985

	Number of Photocopied Items From Libraries in Virginia		Number of Photocopied Items From Libraries Outside Virginia	
Region	Total	Average Per Library	Total	Average Per Library
Northern	1,776	55	4,590	139
Northwest	706	19	3,110	77
Piedmont	5,258	116	2,784	67
Southern	2,179	62	295	8
Southwest	1,760	47	1,263	33
Tidewater	5,287	146	714	19
All	16,966	76	12,756	57

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 18A

ILL Requests Received, by Type of Library

TOTAL AND AVERAGE NUMBER OF INTERLIBRARY LOAN REQUESTS RECEIVED BY
VIRGINIA LIBRARIES FROM OTHER LIBRARIES IN AND OUTSIDE VIRGINIA
DURING THE LAST ANNUAL REPORTING PERIOD,
BY TYPE OF LIBRARY, 1985

	Number of ILL Requests Received from Libraries in Virginia		Number of ILL Requests Received From Libraries Outside Virginia	
Type of Library	Total	Average Per Library	Total	Average Per Library
Public	10,702	167	3,958	64
Institutional	944	59	12	-
Academic				
State-Supported	52,380	2,910	48,511	2,695
Community College	759	42	209	11
Private University & College	5,468	273	3,106	163
School	2,284	50	-	-
Special				
State & Local Government	39	6	35	5
Federal Government	8,774	797	4,433	369
Other	774	28	1,181	43
Unknown	178	59	-	-
All	82,302	360	61,445	276

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 18B

ILL Requests Received, by Size of Library

TOTAL AND AVERAGE NUMBER OF INTERLIBRARY LOAN REQUESTS RECEIVED BY
VIRGINIA LIBRARIES FROM OTHER LIBRARIES IN AND OUTSIDE VIRGINIA
DURING THE LAST ANNUAL REPORTING PERIOD,
BY SIZE OF LIBRARY, 1985

	Number of ILL Requests Received from Libraries in Virginia		Number of ILL Requests Received From Libraries Outside Virginia	
Size of Library (Volumes/items)	Total	Average Per Library	Total	Average Per Library
<10,000	1,728	52	751	22
10,000-99,999	10,692	100	4,613	44
100,000-500,000	18,145	386	4,460	103
>500,000	50,514	3,157	51,532	3,220
Unknown	1,223	47	89	3
All	82,302	360	61,445	276

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 18C

ILL Requests Received, by Region

TOTAL AND AVERAGE NUMBER OF INTERLIBRARY LOAN REQUESTS RECEIVED BY
VIRGINIA LIBRARIES FROM OTHER LIBRARIES IN AND OUTSIDE VIRGINIA
DURING THE LAST ANNUAL REPORTING PERIOD,
BY REGION, 1985

	Number of ILL Requests Received from Libraries in Virginia		Number of ILL Requests Received From Libraries Outside Virginia	
Region	Total	Average Per Library	Total	Average Per Library
Northern	8,474	302	5,914	203
Northwest	16,448	401	16,738	408
Piedmont	28,204	587	14,859	316
Southern	3,148	92	514	16
Southwest	14,427	360	17,358	445
Tidewater	11,601	313	6,062	178
All	82,302	360	61,445	276

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 19A

Items Loaned on ILL, by Type of Library

TOTAL AND AVERAGE NUMBER OF ITEMS LOANED BY VIRGINIA LIBRARIES TO OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY TYPE OF LIBRARY, 1985

	Number of Items Loaned to Libraries in Virginia		Number of Items Loaned to Libraries Outside Virginia	
Type of Library	Total	Average Per Library	Total	Average Per Library
Public	6,772	99	2,591	40
Institutional	936	62	2	-
Academic				
State-Supported	34,599	2,035	23,708	1,394
Community College	446	24	131	7
Private University & College	3,832	166	1,452	66
School	8,027	154	14	-
Special				
State & Local Government	8	2	17	3
Federal Government	443	36	650	50
Other	301	9	181	5
Unknown	255	63	30	10
All	55,619	227	28,776	120

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 19B

Items Loaned on ILL, by Size of Library

TOTAL AND AVERAGE NUMBER OF ITEMS LOANED BY VIRGINIA LIBRARIES TO OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY SIZE OF LIBRARY, 1985

	Number of Items Loaned to Libraries in Virginia		Number of Items Loaned to Libraries Outside Virginia	
Size of Library (Volumes/items)	Total	Average Per Library	Total	Average Per Library
<10,000	125	3	127	3
10,000-99,999	4,224	37	923	8
100,000-500,000	19,829	396	3,906	83
>500,000	30,276	1,780	23,769	1,398
Unknown	1,165	37	51	1
All	55,619	227	28,776	120

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 19C

Items Loaned on ILL, by Region

TOTAL AND AVERAGE NUMBER OF ITEMS LOANED BY VIRGINIA LIBRARIES TO OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY REGION, 1985

	Number of Items Loaned to Libraries in Virginia		Number of Items Loaned to Libraries Outside Virginia	
Region	Total	Average Per Library	Total	Average Per Library
Northern	4,446	138	3,401	100
Northwest	10,784	250	7,348	174
Piedmont	24,695	484	6,805	144
Southern	2,054	55	269	7
Southwest	3,723	93	4,021	100
Tidewater	9,917	241	6,932	173
All	55,619	227	28,776	120

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 20A

Photocopies Supplied, by Type of Library

TOTAL AND AVERAGE NUMBER OF ITEMS PHOTOCOPIED BY VIRGINIA LIBRARIES AND SENT TO OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY TYPE OF LIBRARY, 1985

	Photocopied Items Sent to Libraries in Virginia		Photocopied Items Sent to Libraries Outside Virginia	
Type of Library	Total	Average Per Library	Total	Average Per Library
Public	479	7	62	-
Institutional	660	44	10	-
Academic				
State-Supported	20,129	1,341	13,574	904
Community College	89	4	31	1
Private University & College	4,323	216	747	37
School	19	-	20	-
Special				
State & Local Government	55	11	27	4
Federal Government	7,785	598	3,977	305
Other	581	18	581	18
Unknown	-	-	-	-
All	34,120	144	19,029	81

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 20B

Photocopies Supplied, by Size of Library

TOTAL AND AVERAGE NUMBER OF ITEMS PHOTOCOPIED BY VIRGINIA LIBRARIES AND SENT TO OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Photocopied Items Sent to Libraries in Virginia		Photocopied Items Sent to Libraries Outside Virginia	
	Total	Average Per Library	Total	Average Per Library
<10,000	1,703	50	947	28
10,000-99,999	8,956	81	3,634	33
100,000-500,000	1,979	44	484	10
>500,000	20,674	1,292	13,874	867
Unknown	808	25	90	3
All	34,120	144	19,029	81

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 20C

Photocopies Supplied, by Region

TOTAL AND AVERAGE NUMBER OF ITEMS PHOTOCOPIED BY VIRGINIA LIBRARIES AND SENT TO OTHER LIBRARIES IN AND OUTSIDE VIRGINIA DURING THE LAST ANNUAL REPORTING PERIOD, BY REGION, 1985

	Photocopied Items Sent to Libraries in Virginia		Photocopied Items Sent to Libraries Outside Virginia	
Region	Total	Average Per Library	Total	Average Per Library
Northern	1,109	32	1,082	33
Northwest	2,175	57	1,806	46
Piedmont	14,208	284	6,854	137
Southern	829	23	52	1
Southwest	7,514	192	6,311	157
Tidewater	8,285	207	2,924	74
All	34,120	144	19,029	81

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

SECTION 2

LIBRARY COOPERATION AND NETWORKING

TABLE 21A

Networking Activities, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES THAT CURRENTLY ENGAGE IN ANY FORMAL AND/OR INFORMAL COOPERATIVE AND NETWORKING ACTIVITIES WITH OTHER LIBRARIES, BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries	Proportion (%)
Public	53	67
Institutional	12	50
Academic		
State-Supported	18	95
Community College	17	81
Private University & College	20	80
School	34	40
Special		
State & Local Government	6	67
Federal Government	13	72
Other	21	48
Unknown	3	75
All	197	60

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 21B

Networking Activities, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES THAT BELONG TO COOPERATIVES OR LIBRARY NETWORKS, BY SIZE OF LIBRARY, 1985

Size of Library (Volume/items)	Number of Libraries	Proportion (%)
< 10,000	22	43
10,000 - 99,999	79	55
100,000 - 500,000	54	83
> 500,000	22	92
Unknown	20	43
All	197	60

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 21C

Networking Activities, by Region

NUMBER AND PROPORTION OF LIBRARIES THAT CURRENTLY ENGAGE IN ANY FORMAL AND/OR INFORMAL COOPERATIVE AND NETWORKING ACTIVITIES WITH OTHER LIBRARIES, BY REGION, 1985

Region	Number of Libraries	Proportion (%)
Northern	34	62
Northwest	30	55
Piedmont	41	64
Southern	25	49
Southwest	30	59
Tidewater	37	65
All	197	60

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 22A

Perceived Benefits of Networking, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES THAT CONSIDER PARTICIPATION IN COOPERATIVE AND NETWORKING ACTIVITIES TO HAVE A VARIETY OF MAJOR BENEFITS OR ADVANTAGES, BY TYPE OF LIBRARY, 1985

	Major Benefits/Advantages															
	Access to Greater Resources		Improved Service To Patrons		Convenience		Cost Savings		Space Savings		Increased Communications Among Libraries		Labor Savings		Other	
Type of Library	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
Public	39	89	41	93	16	36	16	36	7	16	21	48	10	23	2	5
Institutional	11	92	10	83	4	33	5	42	3	25	5	42	1	8	1	8
Academic																
State-Supported	16	94	16	94	6	35	5	29	3	18	8	47	6	35	2	12
Community College	15	88	16	94	9	53	6	35	4	24	8	47	4	24	1	6
Private University & College	18	95	16	84	11	58	7	37	1	5	11	58	7	37	-	-
School	18	86	17	81	6	29	2	10	4	19	11	52	1	5	1	5
Special																
State & Local Government	5	100	5	100	2	40	2	40	1	20	4	80	2	40	-	-
Federal Government	11	100	10	91	7	64	9	82	5	45	6	55	5	45	-	-
Other	12	75	10	67	3	19	4	25	5	31	5	31	4	25	-	-
Unknown	3	100	3	100	1	33	1	33	1	33	1	33	1	33	-	-
All	148	90	144	88	65	39	57	35	34	21	80	48	41	25	7	4

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 22B

Perceived Benefits of Networking, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES THAT CONSIDER PARTICIPATION IN COOPERATIVE AND NETWORKING ACTIVITIES TO HAVE A VARIETY OF MAJOR BENEFITS OR ADVANTAGES, BY SIZE OF LIBRARY, 1985

	Major Benefits/Advantages															
	Access to Greater Resources		Improved Service To Patrons		Convenience		Cost Savings		Space Savings		Increased Communications Among Libraries		Labor Savings		Other	
Size of Library (Volumes/items)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
< 10,000	20	91	18	82	9	41	10	45	9	41	11	50	5	23	1	5
10,000 - 99,999	57	88	55	85	21	32	28	43	14	22	29	45	14	22	2	3
100,000 - 500,000	44	94	44	96	20	43	10	21	8	17	23	49	12	26	2	4
> 500,000	20	95	20	95	9	43	5	24	1	5	11	52	8	38	2	10
Unknown	7	70	7	70	6	60	4	40	2	20	6	60	2	20	0	0
All	148	90	144	88	65	39	57	35	34	21	80	48	41	25	7	4

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 22C

Perceived Benefits of Networking, by Region

NUMBER AND PROPORTION OF LIBRARIES THAT CONSIDER PARTICIPATION IN COOPERATIVE AND NETWORKING ACTIVITIES TO HAVE A VARIETY OF MAJOR BENEFITS OR ADVANTAGES, BY REGION, 1985

Region	Major Benefits/Advantages															
	Access to Greater Resources		Improved Service To Patrons		Convenience		Cost Savings		Space Savings		Increased Communications Among Libraries		Labor Savings		Other	
	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
Northern	24	96	23	96	14	56	9	36	6	24	11	44	7	28	1	4
Northwest	24	89	21	78	10	37	6	22	3	11	14	52	4	15	1	4
Piedmont	33	94	32	91	15	43	17	49	12	34	18	51	10	29	2	6
Southern	16	89	16	89	5	28	8	44	2	11	8	44	5	28	0	0
Southwest	21	78	25	93	11	41	5	19	4	15	13	48	5	19	1	4
Tidewater	30	91	27	82	10	30	12	36	7	21	16	48	10	30	2	6
All	148	90	144	88	65	39	57	35	34	21	80	48	41	25	7	4

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 23A

Unsuccessful Networking, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES THAT HAVE PARTICIPATED IN ANY FORMAL AND/OR INFORMAL COOPERATIVE AND NETWORKING ACTIVITIES THAT WERE UNSUCCESSFUL IN ANY WAY, BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries	Proportion (%)
Public	14	33
Institutional	-	-
Academic		
State-Supported	3	19
Community College	4	25
Private University & College	7	39
School	1	6
Special		
State & Local Government	-	-
Federal Government	-	-
Other	2	14
Unknown	-	-
All	31	20

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 23B

Unsuccessful Networking, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES THAT HAVE PARTICIPATED IN ANY FORMAL AND/OR INFORMAL COOPERATIVE AND NETWORKING ACTIVITIES THAT WERE UNSUCCESSFUL IN ANY WAY, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Number of Libraries	Proportion (%)
< 10,000	1	5
10,000 - 99,999	11	17
100,000 - 500,000	10	23
> 500,000	8	47
Unknown	1	11
All	31	20

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 23C

Unsuccessful Networking, by Region

NUMBER AND PROPORTION OF LIBRARIES THAT HAVE PARTICIPATED IN ANY FORMAL AND/OR INFORMAL COOPERATIVE AND NETWORKING ACTIVITIES THAT WERE UNSUCCESSFUL IN ANY WAY, BY REGION, 1985

Region	Number of Libraries	Proportion (%)
Northern	7	32
Northwest	5	22
Piedmont	2	6
Southern	7	35
Southwest	2	8
Tidewater	8	28
All	31	20

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 24A

Importance of Network Services, by Type of Library

AVERAGE RATINGS (ON A SCALE OF 1-5) OF PERCEIVED IMPORTANCE
TO THE LIBRARY OF FUNCTIONS/SERVICES WHICH CAN BE OFFERED THROUGH
A LIBRARY NETWORK OR COOPERATIVE ARRANGEMENT, BY TYPE OF LIBRARY, 1985

	Type of Library										
Function/Service	Public	Institutional	State Supported	Community College	Private University & College	School	State & Local Government	Federal Government	Other	Unknown	All
Union catalogs	3.9	2.7	3.8	4.2	4.4	3.2	3.0	3.8	3.6	4.0	3.7
Union lists of serials	3.7	2.4	4.5	4.2	4.6	3.3	3.8	3.8	3.6	4.0	3.7
Union lists of audiovisuals	2.9	3.0	2.7	3.5	3.7	3.4	2.8	2.7	1.9	3.3	3.0
Information retrieval	3.2	2.8	3.3	3.6	3.8	4.0	2.8	3.8	3.4	4.0	3.5
Interlibrary loan	4.5	3.8	4.7	4.5	4.7	3.9	4.4	4.2	4.0	4.8	4.3
Reciprocal borrowing	4.0	2.5	3.9	3.9	3.8	3.6	3.2	4.0	3.0	4.0	3.7
Document delivery service	3.0	1.9	3.9	3.2	3.7	3.1	2.5	4.3	3.0	3.5	3.1
Materials booking/scheduling	2.8	2.9	1.8	2.9	2.7	3.1	2.0	2.3	1.3	3.0	2.6
Shared staff expertise	3.5	4.0	3.3	3.5	3.2	3.8	4.3	3.0	3.0	3.3	3.5
Shared cataloging	3.4	3.1	3.6	3.7	3.7	3.3	3.8	3.2	2.4	3.5	3.3
Cooperative purchasing	2.2	2.7	2.3	2.3	2.7	2.7	2.8	2.7	1.9	3.5	2.4
Cooperative collection development	2.7	2.8	2.9	2.5	3.4	3.0	3.0	2.8	2.1	3.3	2.8
Continuing education for staff	4.2	4.2	3.0	3.7	3.3	3.9	3.3	2.7	3.3	4.0	3.7
Shared communications systems	3.4	2.8	3.7	3.4	3.7	3.4	3.0	2.9	2.5	3.8	3.3
Shared storage and warehousing	2.0	2.0	2.4	1.7	2.2	2.3	2.5	2.7	1.7	3.0	2.1
Shared consulting	3.4	2.9	2.7	3.0	2.7	3.5	2.3	2.5	2.5	4.0	3.1
Cooperative research & development	2.8	2.6	3.1	2.6	3.0	3.3	2.0	2.5	2.6	3.5	2.9
Cooperative market research	2.9	2.5	2.5	2.5	2.8	2.7	2.3	2.5	2.2	3.5	2.7
Joint public relations programs	3.3	2.7	2.2	2.7	2.2	3.5	2.0	1.9	1.6	3.5	2.8
Publishing of union lists, specialized bibliographies	3.1	2.7	3.4	3.7	3.2	3.4	3.8	3.2	3.0	3.5	3.2
Index of local, regional, state publications	3.9	3.0	3.5	3.5	3.4	3.6	2.8	2.9	3.2	4.0	3.5
Other	4.4	5.0	4.3	-	5.0	-	-	5.0	-	-	4.6

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=

TABLE 24B

Importance of Network Services, by Size of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF PERCEIVED IMPORTANCE
TO THE LIBRARY OF FUNCTIONS/SERVICES WHICH CAN BE OFFERED THROUGH
A LIBRARY NETWORK OR COOPERATIVE ARRANGEMENT, BY SIZE OF LIBRARY, 1985

	Size of Library (Volumes/items)					
Function/Service	< 10,000	10,000-99,999	100,000-500,000	> 500,000	Unknown	All
Union catalogs	2.7	3.8	4.2	3.7	2.9	3.7
Union lists of serials	3.0	3.7	4.3	4.1	3.0	3.7
Union lists of audiovisuals	2.6	2.9	3.6	2.8	2.8	3.0
Information retrieval	3.2	3.4	3.8	3.5	3.7	3.5
Interlibrary loan	4.0	4.4	4.6	4.5	3.5	4.3
Reciprocal borrowing	2.8	3.8	4.1	3.8	3.1	3.7
Document delivery service	2.7	2.9	3.6	3.7	3.1	3.1
Materials booking/scheduling	2.3	2.6	2.9	2.2	2.9	2.6
Shared staff expertise	3.9	3.5	3.6	3.3	3.1	3.5
Shared cataloging	3.1	3.2	3.8	3.3	2.9	3.3
Cooperative purchasing	2.6	2.4	2.5	2.2	2.3	2.4
Cooperative collection development	2.6	2.8	2.9	2.9	2.8	2.8
Continuing education for staff	3.9	3.8	4.0	3.2	3.4	3.7
Shared communications systems	2.7	3.3	3.5	3.4	3.3	3.3
Shared storage and warehousing	2.1	2.2	2.1	1.9	2.3	2.1
Shared consulting	2.9	3.1	3.3	2.4	3.3	3.1
Cooperative research & development	2.5	2.8	3.1	3.0	3.1	2.9
Cooperative market research	2.5	2.6	2.9	2.4	2.8	2.7
Joint public relations programs	2.6	2.8	3.1	2.3	2.8	2.8
Publishing of union lists, specialized bibliographies	2.9	3.2	3.5	3.2	3.0	3.2
Index of local, regional, state publications	3.3	3.5	3.7	3.6	3.4	3.5
Other	-	4.5	4.0	4.6	5.0	4.6

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 24C

Importance of Network Services, by Region

AVERAGE RATINGS (ON A SCALE OF 1-5) OF PERCEIVED IMPORTANCE
TO THE LIBRARY OF FUNCTIONS/SERVICES WHICH CAN BE OFFERED THROUGH
A LIBRARY NETWORK OR COOPERATIVE ARRANGEMENT, BY REGION, 1985

	Region						
Function/Service	Northern	Northwest	Piedmont	Southern	Southwest	Tidewater	All
Union catalogs	3.8	3.9	3.6	3.3	3.6	3.7	3.7
Union lists of serials	3.8	4.1	3.6	3.3	3.5	3.9	3.7
Union lists of audiovisuals	2.6	3.3	3.1	3.0	2.9	3.0	3.0
Information retrieval	3.7	3.5	3.4	3.5	3.4	3.6	3.5
Interlibrary loan	4.3	4.5	4.2	4.1	4.3	4.4	4.3
Reciprocal borrowing	3.9	3.9	3.5	3.5	3.6	3.6	3.7
Document delivery service	3.3	3.1	3.2	2.7	3.0	3.4	3.1
Materials booking/scheduling	2.4	2.8	2.7	2.8	2.6	2.5	2.6
Shared staff expertise	3.6	3.6	3.4	3.5	3.4	3.6	3.5
Shared cataloging	3.2	3.4	3.4	3.2	3.1	3.6	3.3
Cooperative purchasing	2.2	2.6	2.4	2.4	2.5	2.5	2.4
Cooperative collection development	2.7	2.9	2.8	2.7	d2.9	2.8	2.8
Continuing education for staff	3.8	3.7	3.6	3.9	3.8	3.7	3.7
Shared communications systems	3.2	3.4	3.1	3.6	3.2	3.3	3.3
Shared storage and warehousing	2.0	2.2	2.1	2.2	2.2	2.0	2.1
Shared consulting	3.0	3.1	2.8	3.4	3.2	3.0	3.1
Cooperative research & development	3.0	3.0	2.8	3.0	2.7	3.0	2.9
Cooperative market research	2.6	2.9	2.5	2.6	2.6	2.7	2.7
Joint public relations programs	2.7	3.2	2.5	2.9	2.7	2.8	2.8
Publishing of union lists, specialized bibliographies	3.6	3.4	3.3	3.0	3.1	3.1	3.2
Index of local, regional, state publications	3.5	3.3	3.6	3.5	3.8	3.4	3.5
Other	4.8	4.5	4.6	4.0	5.0	-	4.6

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 25A

Importance of Issues on Cooperative Activities for Inclusion in Formal Networking Plan, by Type of Library

AVERAGE RATINGS (ON A SCALE OF 1-5) OF IMPORTANCE OF ISSUES
RELATING TO COOPERATIVE ACTIVITIES TO BE ADDRESSED IN A FORMAL STATEWIDE PLAN
FOR LIBRARY AUTOMATION AND NETWORKING, BY TYPE OF LIBRARY, 1985

	Type of Library										
Function/Service	Public	Institutional	State Supported	Community College	Private University & College	School	State & Local Government	Federal Government	Other	Unknown	All
Membership and role of individual types of libraries in a statewide network	4.4	3.9	4.6	4.3	4.5	3.9	4.3	3.4	3.8	4.7	4.2
Membership and role of individual types of libraries in regional consortia	4.2	3.7	3.9	4.1	4.3	3.8	4.3	3.5	3.9	4.0	4.0
Governance of network	4.4	3.5	4.2	4.5	4.5	3.9	3.5	3.3	3.8	4.3	4.1
Structure of network	4.4	3.8	4.4	4.6	4.4	4.0	3.3	3.7	3.8	4.7	4.2
Costs and pricing	4.3	4.2	4.3	4.6	4.6	3.9	4.3	4.0	3.9	5.0	4.2
Sources of funding	4.5	4.4	4.6	4.8	4.6	4.2	4.3	3.4	3.6	5.0	4.3
Hardware requirements	4.3	3.9	3.8	4.4	4.3	4.1	3.8	3.9	3.5	4.7	4.1
Performance requirements	4.5	3.8	4.5	4.3	4.1	4.0	4.0	4.0	3.8	4.7	4.2
Performance of monitoring and evaluation	4.4	3.6	4.2	4.1	4.1	4.1	4.0	4.0	3.4	4.3	4.1
Staff training at the local level	4.3	4.3	3.5	4.4	3.9	4.2	4.3	3.6	3.7	4.3	4.1
Other	4.8	-	4.7	5.0	5.0	-	-	-	-	5.0	4.8

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 25B

Importance of Issues on Cooperative Activities for Inclusion in Formal Networking Plan, by Size of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF IMPORTANCE OF ISSUES
RELATING TO COOPERATIVE ACTIVITIES TO BE ADDRESSED IN A FORMAL STATEWIDE PLAN
FOR LIBRARY AUTOMATION AND NETWORKING, BY SIZE OF LIBRARY, 1985

Issues to Include in the Formal Plan	Size of Library (Volumes/items)					
	< 10,000	10,000-99,999	100,000-500,000	> 500,000	Unknown	All
Membership and role of individual types of libraries in a statewide network	3.9	4.1	4.6	4.7	3.7	4.2
Membership and role of individual types of libraries in regional consortia	3.7	3.9	4.4	4.3	3.5	4.0
Governance of network	3.7	3.9	4.7	4.7	3.3	4.1
Structure of network	3.8	4.2	4.5	4.6	3.6	4.2
Costs and pricing	3.8	4.3	4.5	4.4	3.6	4.2
Sources of funding	3.9	4.4	4.5	4.8	3.7	4.3
Hardware requirements	3.8	4.1	4.4	4.0	3.5	4.1
Performance requirements	4.0	4.2	4.5	4.5	3.5	4.2
Performance of monitoring and evaluation	3.9	4.0	4.4	4.4	3.5	4.1
Staff training at the local level	4.2	4.2	4.1	3.9	3.7	4.1
Other	-	4.8	5.0	4.7	-	4.8

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 25C

Importance of Issues on Cooperative Activities for Inclusion in Formal Networking Plan, by Region

AVERAGE RATINGS (ON A SCALE OF 1-5) OF IMPORTANCE OF ISSUES
RELATING TO COOPERATIVE ACTIVITIES TO BE ADDRESSED IN A FORMAL STATEWIDE PLAN
FOR LIBRARY AUTOMATION AND NETWORKING, BY REGION, 1985

Issues to Include in the Formal Plan	Region						
	Northern	Northwest	Piedmont	Southern	Southwest	Tidewater	All
Membership and role of individual types of libraries in a statewide network	4.3	4.2	4.0	4.0	4.2	4.4	4.2
Membership and role of individual types of libraries in regional consortia	4.1	4.1	3.9	3.7	3.9	4.2	4.0
Governance of network	4.0	3.9	4.0	4.1	4.2	4.2	4.1
Structure of network	4.0	4.0	4.1	4.2	4.3	4.5	4.2
Costs and pricing	4.1	4.3	4.2	4.2	4.1	4.5	4.2
Sources of funding	4.1	4.4	4.2	4.2	4.3	4.7	4.3
Hardware requirements	3.9	3.8	4.1	4.1	4.1	4.4	4.1
Performance requirements	4.0	3.9	4.2	4.2	4.3	4.6	4.2
Performance of monitoring and evaluation	3.9	3.9	4.1	4.0	4.0	4.3	4.1
Staff training at the local level	4.0	4.1	4.1	4.2	4.2	4.1	4.1
Other	5.0	5.0	4.6	5.0	4.5	5.0	4.8

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 26A

Effects of Development of a Formal Networking Plan on Existing Networks, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES THAT THINK DEVELOPMENT OF A FORMAL STATEWIDE PLAN FOR NETWORKING AND RESOURCE SHARING WILL CAUSE EXISTING COOPERATIVE EFFORTS AND NETWORKS TO IMPROVE, REMAIN THE SAME, OR DETERIORATE, BY TYPE OF LIBRARY, 1985

Type of Library	Improve (#)	Improve (%)	Remain the Same (#)	Remain the Same (%)	Deteriorate (#)	Deteriorate (%)	Total (#)	Total (%)
Public	41	77	8	15	4	8	53	100
Institutional	16	80	4	20	-	-	20	100
Academic								
State-Supported	9	75	2	17	1	8	12	100
Community College	14	78	3	17	1	6	18	101
Private University & College	17	77	4	18	1	5	22	100
School	41	91	4	9	-	-	45	100
Special								
State & Local Government	2	40	3	60	-	-	10	100
Federal Government	7	70	3	30	-	-	10	100
Other	13	68	5	26	1	5	19	99
Unknown	3	100	-	-	-	-	3	100
All	163	79	36	17	8	4	207	100

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 26B

Effects of Development of a Formal Networking Plan on Existing Networks, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES THAT THINK DEVELOPMENT OF
A FORMAL STATEWIDE PLAN FOR NETWORKING AND RESOURCE SHARING
WILL CAUSE EXISTING COOPERATIVE EFFORTS AND NETWORKS TO IMPROVE,
REMAIN THE SAME, OR DETERIORATE, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Improve		Remain the Same		Deteriorate		Total	
	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
< 10,000	18	67	8	30	1	4	27	101
10,000 - 99,999	74	76	17	18	6	6	97	100
100,000 - 500,000	40	91	4	9	0	0	44	100
> 500,000	14	88	1	6	1	6	16	100
Unknown	17	74	6	26	0	0	23	100
All	163	79	36	17	8	4	207	100

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 26C

Effects of Development of a Formal Networking Plan on Existing Networks, by Region

NUMBER AND PROPORTION OF LIBRARIES THAT THINK DEVELOPMENT OF
A FORMAL STATEWIDE PLAN FOR NETWORKING AND RESOURCE SHARING
WILL CAUSE EXISTING COOPERATIVE EFFORTS AND NETWORKS TO IMPROVE,
REMAIN THE SAME, OR DETERIORATE, BY REGION, 1985

Region	Improve (#)	Improve (%)	Remain the Same (#)	Remain the Same (%)	Deteriorate (#)	Deteriorate (%)	Total (#)	Total (%)
Northern	22	81	4	15	1	4	27	100
Northwest	30	83	5	14	1	3	36	100
Piedmont	34	77	8	18	2	5	44	100
Southern	19	63	8	27	3	10	30	100
Southwest	28	82	5	15	1	3	34	100
Tidewater	30	83	6	17	0	0	36	100
All	163	79	36	17	8	4	207	100

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 27A

Conditions that Encourage Cooperation, by Type of Library

AVERAGE RATINGS (ON A SCALE OF 1-5) OF CONDITIONS THAT WILL ENCOURAGE DEVELOPMENT OF IN-STATE INTERLIBRARY COOPERATION AND RESOURCE SHARING, BY TYPE OF LIBRARY, 1985

	Type of Library										
Conditions that Encourage Cooperation	Public	Institutional	State Supported	Community College	Private University & College	School	State & Local Government	Federal Government	Other	Unknown	All
Willingness to share	4.6	4.6	4.4	4.7	4.7	4.7	5.0	4.6	4.3	4.5	4.6
Funding and support at state level	4.5	4.6	4.9	4.7	4.4	4.5	4.3	4.3	4.0	4.0	4.5
Availability of funding	4.7	4.7	4.9	4.7	4.6	4.5	3.5	4.5	4.2	4.0	4.6
Local or institutional support	4.4	4.3	4.2	4.4	4.4	4.5	4.2	4.0	4.3	4.5	4.4
Improved performance	4.1	4.3	4.2	3.9	4.0	4.3	4.0	4.0	3.8	4.8	4.1
Improved effectiveness to patrons	4.4	4.3	4.0	4.2	4.2	4.4	4.0	4.0	4.1	4.5	4.3
Existing cooperative activities	3.7	4.1	3.3	3.7	3.5	4.0	4.0	3.4	3.3	3.8	3.7
Other	4.8	-	-	4.0	4.0	5.0	-	-	-	5.0	4.7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 27B

Conditions that Encourage Cooperation, by Size of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF CONDITIONS THAT WILL ENCOURAGE DEVELOPMENT OF IN-STATE INTERLIBRARY COOPERATION AND RESOURCE SHARING, BY SIZE OF LIBRARY, 1985

	Size of Library (Volumes/items)					
Conditions that Encourage Cooperation	< 10,000	10,000-99,999	100,000-500,000	> 500,000	Unknown	All
Willingness to share	4.5	4.6	4.7	4.6	4.5	4.6
Funding and support at state level	4.3	4.5	4.7	4.8	4.0	4.5
Availability of funding	4.3	4.6	4.8	4.8	4.1	4.6
Local or institutional support	4.2	4.3	4.7	4.1	4.2	4.4
Improved performance	4.2	4.1	4.3	4.2	3.8	4.1
Improved effectiveness to patrons	4.3	4.2	4.4	4.3	4.0	4.3
Existing cooperative activities	3.6	3.7	3.7	3.5	3.8	3.7
Other	-	5.0	4.6	4.6	-	4.7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 27C

Conditions that Encourage Cooperation, by Region

AVERAGE RATING (ON A SCALE OF 1-5) OF CONDITIONS THAT WILL ENCOURAGE DEVELOPMENT OF IN-STATE INTERLIBRARY COOPERATION AND RESOURCE SHARING, BY REGION, 1985

Conditions that Encourage Cooperation	Region						
	Northern	Northwest	Piedmont	Southern	Southwest	Tidewater	All
Willingness to share	4.6	4.5	4.7	4.5	4.5	4.7	4.6
Funding and support at state level	4.5	4.4	4.6	4.3	4.5	4.6	4.5
Availability of funding	4.6	4.5	4.6	4.5	4.6	4.7	4.6
Local or institutional support	4.4	4.3	4.4	4.2	4.3	4.4	4.4
Improved performance	4.1	4.0	4.3	4.0	4.1	4.3	4.1
Improved effectiveness to patrons	4.4	4.1	4.3	4.1	4.2	4.5	4.3
Existing cooperative activities	3.5	3.7	3.9	3.6	3.6	3.8	3.7
Other	4.7	5.0	4.0	4.8	5.0	4.8	4.7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 28A

Conditions that Inhibit Cooperation, by Type of Library

AVERAGE RATINGS (ON A SCALE OF 1-5) OF CONDITIONS THAT WILL INHIBIT DEVELOPMENT OF IN-STATE INTERLIBRARY COOPERATION AND RESOURCE SHARING, BY TYPE OF LIBRARY, 1985

Conditions that Inhibit Cooperation	Type of Library										
	Public	Institutional	State Supported	Community College	Private University & College	School	State & Local Government	Federal Government	Other	Unknown	All
Lack of funding	4.4	4.7	4.8	4.7	4.7	4.6	4.2	4.6	4.4	4.0	4.6
Uncooperative attitude	4.4	4.3	4.4	4.4	3.8	4.3	4.2	4.7	4.1	4.3	4.3
Lack of support at state level	4.2	4.2	4.8	4.6	4.0	4.3	4.0	4.6	4.0	4.3	4.3
Lack of local or institutional support	4.2	4.4	4.3	4.2	4.2	4.3	4.4	4.0	4.4	4.5	4.3
Unpreparedness of Virginia libraries	3.9	4.1	4.0	4.3	3.4	4.4	3.5	3.4	3.6	4.0	3.9
Insufficient personnel	3.8	4.6	4.2	4.1	3.9	4.1	3.8	4.1	4.0	3.3	4.0
Other	4.7	5.0	4.0	4.4	4.3	5.0	-	4.0	-	-	4.5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 28B

Conditions that Inhibit Cooperation, by Size of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF CONDITIONS THAT WILL INHIBIT DEVELOPMENT
OF IN-STATE INTERLIBRARY COOPERATION AND RESOURCE SHARING, BY SIZE OF LIBRARY, 1985

	Size of Library (Volumes/items)					
Conditions that Inhibit Cooperation	< 10,000	10,000-99,999	100,000-500,000	> 500,000	Unknown	All
Lack of funding	4.2	4.7	4.6	4.6	4.4	4.6
Uncooperative attitude	4.4	4.3	4.5	4.0	4.1	4.3
Lack of support at state level	4.1	4.3	4.4	4.5	4.1	4.3
Lack of local or institutional support	4.4	4.2	4.5	4.2	5.1	4.3
Unpreparedness of Virginia libraries	4.0	4.0	3.9	3.7	4.0	3.9
Insufficient personnel	4.4	4.0	3.8	3.8	4.1	4.0
Other	-	4.7	4.5	4.3	4.0	4.5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 28C

Conditions that Inhibit Cooperation, by Region

AVERAGE RATINGS (ON A SCALE OF 1-5) OF CONDITIONS THAT WILL INHIBIT DEVELOPMENT
OF IN-STATE INTERLIBRARY COOPERATION AND RESOURCE SHARING, BY REGION, 1985

	Region						
Conditions that Inhibit Cooperation	Northern	Northwest	Piedmont	Southern	Southwest	Tidewater	All
Lack of funding	4.6	4.4	4.6	4.6	4.7	4.5	**4.6**
Uncooperative attitude	4.4	3.9	4.3	4.1	4.5	3.9	**4.3**
Lack of support at state level	4.4	4.2	4.1	4.2	4.3	4.5	**4.3**
Lack of local or institutional support	4.3	4.2	4.3	4.3	4.3	4.2	**4.3**
Unpreparedness of Virginia libraries	4.0	3.8	3.8	4.1	4.1	4.0	**3.9**
Insufficient personnel	4.1	4.1	4.0	4.1	4.1	3.7	**4.0**
Other	4.5	4.3	4.3	5.0	4.3	4.9	**4.5**

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 29A

Readiness to Implement Own Automation Activities, by Type of Library

AVERAGE DEGREE OF OVERALL READINESS (ON A SCALE OF 1-7) FOR LIBRARIES TO IMPLEMENT THEIR OWN AUTOMATION ACTIVITIES, BY TYPE OF LIBRARY, 1985

Type of Library	Average Degree of Readiness
Public	3.6
Institutional	2.0
Academic	
State-Supported	5.2
Community College	3.8
Private University & College	4.3
School	3.1
Special	
State & Local Government	3.0
Federal Government	4.0
Other	2.7
Unknown	4.3
All	3.5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 29B

Readiness to Implement Own Automation Activities, by Size of Library

AVERAGE DEGREE OF OVERALL READINESS (ON A SCALE OF 1-7) FOR LIBRARIES TO IMPLEMENT THEIR OWN AUTOMATION ACTIVITIES, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Average Degree of Readiness
< 10,000	2.1
10,000 - 99,999	3.2
100,000 - 500,000	4.5
> 500,000	4.8
Unknown	2.8
All	3.5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

330

TABLE 29C

Readiness to Implement Own Automation Activities, by Region

AVERAGE DEGREE OF OVERALL READINESS (ON A SCALE OF 1-7) FOR LIBRARIES TO IMPLEMENT THEIR OWN AUTOMATION ACTIVITIES, BY REGION, 1985

Region	Average Degree of Readiness
Northern	4.0
Northwest	3.3
Piedmont	3.5
Southern	3.3
Southwest	3.4
Tidewater	3.5
All	3.5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 30A

Readiness to Engage in Automated Networking Activities, by Type of Library

AVERAGE DEGREE OF OVERALL READINESS (ON A SCALE OF 1-7) OF LIBRARIES
TO ENGAGE IN AUTOMATED NETWORKING ACTIVITIES AT THE
REGIONAL AND/OR STATEWIDE LEVELS, BY TYPE OF LIBRARY, 1985

Type of Library	Average Degree of Readiness
Public	3.3
Institutional	2.4
Academic	
State-Supported	4.8
Community College	2.7
Private University & College	4.3
School	2.7
Special	
State & Local Government	1.7
Federal Government	2.4
Other	1.9
Unknown	3.8
All	3.1

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 30B

Readiness to Engage in Automated Networking Activities, by Size of Library

AVERAGE DEGREE OF OVERALL READINESS (ON A SCALE OF 1-7) OF LIBRARIES TO ENGAGE IN AUTOMATED NETWORKING ACTIVITIES AT THE REGIONAL AND/OR STATEWIDE LEVELS, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Average Degree of Readiness
< 10,000	1.9
10,000 - 99,999	2.7
100,000 - 500,000	4.0
> 500,000	4.4
Unknown	2.9
All	3.1

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 30C

Readiness to Engage in Automated Networking Activities, by Region

AVERAGE DEGREE OF OVERALL READINESS (ON A SCALE OF 1-7) OF LIBRARIES
TO ENGAGE IN AUTOMATED NETWORKING ACTIVITIES AT THE
REGIONAL AND/OR STATEWIDE LEVELS, BY REGION, 1985

Region	Average Degree of Readiness
Northern	2.9
Northwest	2.9
Piedmont	3.2
Southern	3.2
Southwest	3.1
Tidewater	3.1
All	3.1

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

334

SECTION 3

GENERAL AUTOMATION

TABLE 31A

Current Use of Automation, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES THAT CURRENTLY UTILIZE AUTOMATION, BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries	Proportion (%)
Public	39	49
Institutional	3	13
Academic		
State-Supported	18	95
Community College	13	62
Private University & College	21	84
School	33	38
Special		
State & Local Government	3	33
Federal Government	9	50
Other	19	43
Unknown	2	50
All	160	49

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 31B

Current Use of Automation, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES THAT CURRENTLY UTILIZE AUTOMATION, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Number of Libraries	Proportion (%)
< 10,000	8	16
10,000 - 99,999	60	42
100,000 - 500,000	54	83
> 500,000	21	88
Unknown	17	37
All	160	49

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 31C

Current Use of Automation, by Region

NUMBER AND PROPORTION OF LIBRARIES THAT CURRENTLY UTILIZE AUTOMATION, BY REGION, 1985

Region	Number of Libraries	Proportion (%)
Northern	27	49
Northwest	27	49
Piedmont	35	55
Southern	20	39
Southwest	25	49
Tidewater	26	46
All	160	49

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 32A

Previous Use of Automation, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHICH UTILIZED AUTOMATION IN THE PAST FOR SOME FUNCTIONS WHICH ARE NO LONGER AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries	Proportion (%)
Public	3	5
Institutional	-	-
Academic		
State-Supported	1	6
Community College	3	18
Private University & College	1	4
School	1	2
Special		
State & Local Government	-	-
Federal Government	-	-
Other	3	11
Unknown	-	-
All	12	5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 32B

Previous Use of Automation, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHICH UTILIZED AUTOMATION IN THE PAST FOR SOME FUNCTIONS WHICH ARE NO LONGER AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Number of Libraries	Proportion (%)
< 10,000	3	8
10,000 - 99,999	3	3
100,000 - 500,000	5	9
> 500,000	1	5
Unknown	-	-
All	12	5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 32C

Previous Use of Automation, by Region

NUMBER AND PROPORTION OF LIBRARIES WHICH UTILIZED AUTOMATION IN THE PAST FOR SOME FUNCTIONS WHICH ARE NO LONGER AUTOMATED, BY REGION, 1985

Region	Number of Libraries	Proportion (%)
Northern	2	6
Northwest	2	5
Piedmont	4	8
Southern	1	3
Southwest	-	-
Tidewater	3	7
All	12	5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 33A

Automation of Acquisitions, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE ACQUISITIONS FUNCTION IS CURRENTLY AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	Currently Automated (%)
Public	9	26
Institutional	-	-
Academic		
State-Supported	5	29
Community College	3	25
Private University & College	4	20
School	4	13
Special		
State & Local Government	-	-
Federal Government	2	25
Other	-	-
Unknown	-	-
All	27	19

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 33B

Automation of Acquisitions, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE ACQUISITIONS FUNCTION IS CURRENTLY AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	(%)
< 10,000	-	-
10,000 - 99,999	6	11
100,000 - 500,000	11	23
> 500,000	8	40
Unknown	2	13
All	27	19

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 33C

Automation of Acquisitions, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE ACQUISITIONS FUNCTION IS CURRENTLY AUTOMATED, BY REGION, 1985

Region	Currently Automated (#)	(%)
Northern	8	35
Northwest	6	24
Piedmont	4	13
Southern	2	11
Southwest	2	8
Tidewater	5	21
All	27	19

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 34A

Automation of Cataloging, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE CATALOGING FUNCTION IS CURRENTLY AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	(%)
Public	20	59
Institutional	2	67
Academic		
State-Supported	17	100
Community College	5	42
Private University & College	15	75
School	10	32
Special		
State & Local Government	1	33
Federal Government	6	75
Other	7	47
Unknown	1	50
All	84	58

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 34B

Automation of Cataloging, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE CATALOGING FUNCTION IS CURRENTLY AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	(%)
< 10,000	1	14
10,000 - 99,999	24	44
100,000 - 500,000	35	73
> 500,000	16	80
Unknown	8	50
All	84	58

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 34C

Automation of Cataloging, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE CATALOGING FUNCTION IS CURRENTLY AUTOMATED, BY REGION, 1985

Region	Currently Automated (#)	(%)
Northern	14	61
Northwest	18	72
Piedmont	20	65
Southern	9	50
Southwest	9	38
Tidewater	14	58
All	84	58

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 35A

Automation of Retrospective Conversion, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE RETROSPECTIVE CONVERSION FUNCTION IS CURRENTLY AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	(%)
Public	21	62
Institutional	-	-
Academic		
State-Supported	10	59
Community College	5	42
Private University & College	6	30
School	3	10
Special		
State & Local Government	-	-
Federal Government	1	13
Other	2	13
Unknown	2	100
All	50	34

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 35B

Automation of Retrospective Conversion, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE RETROSPECTIVE CONVERSION FUNCTION IS CURRENTLY AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	Currently Automated (%)
< 10,000	-	-
10,000 - 99,999	12	22
100,000 - 500,000	25	52
> 500,000	11	55
Unknown	2	13
All	50	34

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 35C

Automation of Retrospective Conversion, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE RETROSPECTIVE CONVERSION FUNCTION IS CURRENTLY AUTOMATED, BY REGION, 1985

Region	Currently Automated (#)	(%)
Northern	9	39
Northwest	7	28
Piedmont	8	26
Southern	9	50
Southwest	7	29
Tidewater	10	29
All	50	34

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 36A

Automation of Catalog Maintenance, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE CATALOG MAINTENANCE FUNCTION IS CURRENTLY AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	(%)
Public	20	59
Institutional	-	-
Academic		
State-Supported	8	47
Community College	5	42
Private University & College	3	15
School	3	10
Special		
State & Local Government	-	-
Federal Government	3	38
Other	2	13
Unknown	1	50
All	45	31

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 36B

Automation of Catalog Maintenance, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE CATALOG MAINTENANCE
FUNCTION IS CURRENTLY AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	(%)
< 10,000	-	-
10,000 - 99,999	15	28
100,000 - 500,000	18	38
> 500,000	9	45
Unknown	3	19
All	45	31

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 36C

Automation of Catalog Maintenance, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE CATALOG MAINTENANCE FUNCTION IS CURRENTLY AUTOMATED, BY REGION, 1985

Region	Currently Automated (#)	Currently Automated (%)
Northern	10	43
Northwest	3	12
Piedmont	9	29
Southern	9	50
Southwest	5	21
Tidewater	9	38
All	45	31

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 37A

Automation of the Public Access Catalog, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE PUBLIC ACCESS CATALOG IS CURRENTLY AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	Currently Automated (%)
Public	9	26
Institutional	-	-
Academic		
State-Supported	4	24
Community College	-	-
Private University & College	-	-
School	2	6
Special		
State & Local Government	-	-
Federal Government	1	13
Other	1	7
Unknown	1	50
All	18	12

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 37B

Automation of the Public Access Catalog, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE PUBLIC ACCESS CATALOG
IS CURRENTLY AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	Currently Automated (%)
< 10,000	-	-
10,000 - 99,999	4	7
100,000 - 500,000	8	17
> 500,000	4	20
Unknown	2	13
All	18	12

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 37C

Automation of the Public Access Catalog, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE PUBLIC ACCESS CATALOG IS CURRENTLY AUTOMATED, BY REGION, 1985

Region	Currently Automated (#)	Currently Automated (%)
Northern	5	22
Northwest	2	8
Piedmont	3	10
Southern	3	17
Southwest	2	8
Tidewater	3	13
All	18	12

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 38A

Automation of Circulation, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE CIRCULATION FUNCTION IS CURRENTLY AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	(%)
Public	10	29
Institutional	-	-
Academic		
State-Supported	8	47
Community College	3	25
Private University & College	1	5
School	12	39
Special		
State & Local Government	-	-
Federal Government	1	13
Other	1	7
Unknown	1	50
All	37	26

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 38B

Automation of Circulation, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE CIRCULATION FUNCTION IS CURRENTLY AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	(%)
< 10,000	-	-
10,000 - 99,999	11	20
100,000 - 500,000	13	27
> 500,000	9	45
Unknown	4	25
All	37	26

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 38C

Automation of Circulation, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE CIRCULATION FUNCTION IS CURRENTLY AUTOMATED, BY REGION, 1985

Region	Currently Automated (#)	(%)
Northern	8	35
Northwest	5	20
Piedmont	6	19
Southern	6	33
Southwest	5	21
Tidewater	7	29
All	37	26

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 39A

Automation of Serials Control, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE SERIALS CONTROL FUNCTION IS CURRENTLY AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	Currently Automated (%)
Public	1	3
Institutional	-	-
Academic		
State-Supported	3	18
Community College	1	8
Private University & College	3	15
School	-	-
Special		
State & Local Government	-	-
Federal Government	1	13
Other	1	7
Unknown	-	-
All	10	7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 39B

Automation of Serials Control, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE SERIALS CONTROL FUNCTION IS CURRENTLY AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	(%)
< 10,000	-	-
10,000 - 99,999	5	9
100,000 - 500,000	2	4
> 500,000	3	15
Unknown	-	-
All	10	7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 39C

Automation of Serials Control, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE SERIALS CONTROL FUNCTION IS CURRENTLY AUTOMATED, BY REGION, 1985

Region	Currently Automated (#)	(%)
Northern	2	9
Northwest	2	8
Piedmont	2	6
Southern	1	6
Southwest	2	8
Tidewater	1	4
All	10	7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 40A

Automation of Reference With Use of Online Databases, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE REFERENCE FUNCTION IS CURRENTLY AUTOMATED WITH USE OF ONLINE DATABASES, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	(%)
Public	5	15
Institutional	-	-
Academic		
State-Supported	15	88
Community College	5	42
Private University & College	13	65
School	6	19
Special		
State & Local Government	1	33
Federal Government	7	88
Other	9	60
Unknown	1	50
All	62	43

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 40B

Automation of Reference With Use of Online Databases, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE REFERENCE FUNCTION IS CURRENTLY AUTOMATED WITH USE OF ONLINE DATABASES, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	(%)
< 10,000	4	57
10,000 - 99,999	17	31
100,000 - 500,000	20	42
> 500,000	17	85
Unknown	4	25
All	62	43

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 40C

Automation of Reference With Use of Online Databases, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE REFERENCE FUNCTION IS CURRENTLY AUTOMATED WITH USE OF ONLINE DATABASES, BY REGION, 1985

Region	Currently Automated (#)	Currently Automated (%)
Northern	13	57
Northwest	125	48
Piedmont	15	48
Southern	6	33
Southwest	6	25
Tidewater	10	42
All	62	43

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 41A

Automation of Interlibrary Loan, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE INTERLIBRARY LOAN
FUNCTION IS CURRENTLY AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	(%)
Public	7	21
Institutional	-	-
Academic		
State-Supported	16	94
Community College	2	17
Private University & College	12	60
School	1	3
Special		
State & Local Government	1	33
Federal Government	6	75
Other	5	33
Unknown	-	-
All	50	34

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 41B

Automation of Interlibrary Loan, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE INTERLIBRARY LOAN FUNCTION IS CURRENTLY AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	(%)
< 10,000	-	-
10,000 - 99,999	12	22
100,000 - 500,000	22	46
> 500,000	13	65
Unknown	3	19
All	50	34

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 41C

Automation of Interlibrary Loan, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE INTERLIBRARY LOAN FUNCTION IS CURRENTLY AUTOMATED, BY REGION, 1985

Region	Currently Automated (#)	Currently Automated (%)
Northern	9	39
Northwest	9	36
Piedmont	14	45
Southern	5	28
Southwest	4	17
Tidewater	9	38
All	50	34

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 42A

Automation of Document Delivery Functions, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE DOCUMENT DELIVERY FUNCTION IS CURRENTLY AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	Currently Automated (%)
Public	2	6
Institutional	-	-
Academic		
State-Supported	1	6
Community College	-	-
Private University & College	1	5
School	1	3
Special		
State & Local Government	-	-
Federal Government	1	13
Other	1	7
Unknown	-	-
All	7	5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 42B

Automation of Document Delivery Functions, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE DOCUMENT DELIVERY FUNCTION IS CURRENTLY AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	(%)
< 10,000	1	14
10,000 - 99,999	-	-
100,000 - 500,000	4	8
> 500,000	2	10
Unknown	-	-
All	7	5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 42C

Automation of Document Delivery Functions, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE DOCUMENT DELIVERY
FUNCTION IS CURRENTLY AUTOMATED, BY REGION, 1985

Region	Currently Automated (#)	Currently Automated (%)
Northern	1	4
Northwest	-	-
Piedmont	2	6
Southern	1	6
Southwest	-	-
Tidewater	3	13
All	7	5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 43A

Automation of Booking/Scheduling, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE BOOKING/SCHEDULING FUNCTION IS CURRENTLY AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	(%)
Public	-	-
Institutional	-	-
Academic		
State-Supported	1	6
Community College	-	-
Private University & College	-	-
School	4	13
Special		
State & Local Government	-	-
Federal Government	-	-
Other	-	-
Unknown	-	-
All	5	3

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 43B

Automation of Booking/Scheduling, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE BOOKING/SCHEDULING FUNCTION IS CURRENTLY AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	(%)
< 10,000	-	-
10,000 - 99,999	-	-
100,000 - 500,000	-	-
> 500,000	4	20
Unknown	1	6
All	5	3

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 43C

Automation of Booking/Scheduling, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE BOOKING/SCHEDULING FUNCTION IS CURRENTLY AUTOMATED, BY REGION, 1985

Region	Currently Automated (#)	(%)
Northern	4	17
Northwest	-	-
Piedmont	1	3
Southern	-	-
Southwest	-	-
Tidewater	-	-
All	5	3

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 44A

Automation of Administrative Support Functions, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE ADMINISTRATIVE SUPPORT FUNCTIONS ARE CURRENTLY AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	Currently Automated (%)
Public	11	32
Institutional	-	-
Academic		
State-Supported	10	59
Community College	3	25
Private University & College	6	30
School	8	26
Special		
State & Local Government	-	-
Federal Government	2	25
Other	1	7
Unknown	1	50
All	42	29

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 44B

Automation of Administrative Support Functions, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WHOSE ADMINISTRATIVE SUPPORT FUNCTIONS ARE CURRENTLY AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	(%)
< 10,000	-	-
10,000 - 99,999	13	24
100,000 - 500,000	17	35
> 500,000	9	45
Unknown	3	19
All	42	29

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 44C

Automation of Administrative Support Functions, by Region

NUMBER AND PROPORTION OF LIBRARIES WHOSE ADMINISTRATIVE SUPPORT FUNCTIONS ARE CURRENTLY AUTOMATED, BY REGION, 1985

Region	Currently Automated (#)	(%)
Northern	9	39
Northwest	7	28
Piedmont	5	16
Southern	4	22
Southwest	5	21
Tidewater	12	50
All	42	29

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 45A

Availability of Microcomputers for Public Use, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WITH MICROCOMPUTERS FOR PUBLIC USE, BY TYPE OF LIBRARY, 1985

Type of Library	Microcomputers for Public Use (#)	(%)
Public	10	29
Institutional	-	-
Academic		
State-Supported	3	18
Community College	6	50
Private University & College	7	35
School	7	23
Special		
State & Local Government	-	-
Federal Government	-	-
Other	-	-
Unknown	1	50
All	34	23

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 45B

Availability of Microcomputers for Public Use, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WITH MICROCOMPUTERS FOR PUBLIC USE, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Microcomputers for Public Use (#)	(%)
< 10,000	-	-
10,000 - 99,999	13	24
100,000 - 500,000	13	27
> 500,000	6	30
Unknown	2	13
All	34	23

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 45C

Availability of Microcomputers for Public Use, by Region

NUMBER AND PROPORTION OF LIBRARIES WITH MICROCOMPUTERS FOR PUBLIC USE,
BY REGION, 1985

Region	Microcomputers for Public Use (#)	(%)
Northern	5	22
Northwest	5	20
Piedmont	5	16
Southern	5	28
Southwest	6	25
Tidewater	8	33
All	34	23

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 46A

Automation of Other Functions, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WITH OTHER FUNCTIONS CURRENTLY AUTOMATED, BY TYPE OF LIBRARY, 1985

Type of Library	Currently Automated (#)	Currently Automated (%)
Public	8	24
Institutional	1	33
Academic		
State-Supported	4	24
Community College	6	50
Private University & College	3	15
School	5	16
Special		
State & Local Government	–	–
Federal Government	1	13
Other	3	20
Unknown	2	100
All	33	23

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 46B

Automation of Other Functions, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WITH OTHER
FUNCTIONS CURRENTLY AUTOMATED, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Currently Automated (#)	(%)
< 10,000	-	-
10,000 - 99,999	15	28
100,000 - 500,000	11	23
> 500,000	4	20
Unknown	3	19
All	33	23

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 46C

Automation of Other Functions, by Region

NUMBER AND PROPORTION OF LIBRARIES WITH OTHER FUNCTIONS CURRENTLY AUTOMATED, BY REGION, 1985

Region	Currently Automated (#)	 (%)
Northern	5	22
Northwest	4	16
Piedmont	9	29
Southern	1	6
Southwest	5	21
Tidewater	9	38
All	33	23

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 47A

Benefits of Current Automation, by Type of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF IMPORTANCE TO THE LIBRARY
OF THE BENEFITS OR ADVANTAGES OF CURRENT AUTOMATION, BY TYPE OF LIBRARY, 1985

	Type of Library										
Benefits to Library	Public	Institutional	State Supported	Community College	Private University & College	School	State & Local Government	Federal Government	Other	Unknown	All
Increased productivity	4.2	5.0	4.4	3.8	4.2	4.4	5.0	4.8	4.4	4.3	4.3
Improved performance/ efficiency	4.3	4.5	4.6	4.1	4.4	4.7	5.0	4.8	4.2	4.3	4.4
Improved effectiveness to patron	4.2	4.5	4.6	4.1	4.3	4.5	5.0	5.0	4.6	2.7	4.4
Improved record keeping	3.8	4.7	4.4	3.9	4.1	4.5	4.0	3.5	4.1	4.7	4.1
Building local expertise and experience	3.4	4.5	4.0	3.6	3.4	3.9	-	3.8	2.6	3.3	3.6
Improved management of resources	3.8	4.5	4.2	3.6	3.8	4.3	-	4.0	4.2	3.7	4.0
Improved access to local resources	3.6	4.0	4.0	3.6	3.5	3.5	4.0	4.2	3.4	2.3	3.6
Ability to search online catalog of your library from a remote location	2.8	2.0	3.8	2.1	2.9	2.8	-	3.0	2.1	1.0	2.8
Ability to search online catalog of other libraries from a remote location	2.7	1.5	2.9	3.0	3.0	2.8	-	4.2	2.5	2.3	2.8
Improved information services	3.2	2.5	4.2	3.8	4.2	3.9	-	4.8	4.5	2.3	3.8
Other	4.5	-	4.7	5.0	4.0	5.0	-	4.0	5.0	-	4.6

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 47B

Benefits of Current Automation, by Size of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF IMPORTANCE TO THE LIBRARY
OF THE BENEFITS OR ADVANTAGES OF CURRENT AUTOMATION, BY SIZE OF LIBRARY, 1985

	Size of Library (Volumes/items)					
Benefits to Library	< 10,000	10,000-99,999	100,000-500,000	> 500,000	Unknown	All
Increased productivity	4.4	4.1	4.4	4.4	4.5	4.3
Improved performance/ efficiency	4.8	4.3	4.5	4.5	4.5	4.4
Improved effectiveness to patron	4.2	4.2	4.5	4.4	4.5	4.4
Improved record keeping	5.0	4.0	4.0	4.1	4.8	4.1
Building local expertise and experience	1.8	3.5	3.7	3.6	4.0	3.6
Improved management of resources	4.5	3.8	4.0	4.2	4.5	4.0
Improved access to local resources	3.0	3.4	3.6	3.9	4.1	3.6
Ability to search online catalog of your library from a remote location	1.0	2.3	2.9	3.7	3.3	2.8
Ability to search online catalog of other libraries from a remote location	1.0	2.6	2.9	3.0	3.4	2.8
Improved information services	4.0	3.6	4.0	3.9	4.2	3.8
Other	-	4.6	4.3	4.7	5.0	4.6

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 47C

Benefits of Current Automation, by Region

AVERAGE RATING (ON A SCALE OF 1-5) OF IMPORTANCE TO THE LIBRARY
OF THE BENEFITS OR ADVANTAGES OF CURRENT AUTOMATION, BY REGION, 1985

	Region						
Benefits to Library	Northern	Northwest	Piedmont	Southern	Southwest	Tidewater	All
Increased productivity	4.2	4.3	4.6	3.9	4.0	4.5	4.3
Improved performance/ efficiency	4.4	4.5	4.6	4.2	4.2	4.6	4.4
Improved effectiveness to patron	4.3	4.6	4.3	4.0	4.5	4.5	4.4
Improved record keeping	4.3	4.1	4.3	3.5	3.9	4.4	4.1
Building local expertise and experience	3.5	3.8	3.6	3.3	3.4	3.8	3.6
Improved management of resources	4.2	4.3	4.3	3.1	3.7	4.1	4.0
Improved access to local resources	3.9	3.7	3.6	3.4	3.1	3.9	3.6
Ability to search online catalog of your library from a remote location	4.1	2.1	2.7	2.6	2.5	3.1	2.8
Ability to search online catalog of other libraries from a remote location	3.9	2.5	2.9	2.7	2.1	2.9	2.8
Improved information services	4.4	4.0	3.7	3.4	3.5	4.0	3.8
Other	5.0	4.8	4.5	-	4.0	4.7	4.6

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 48A

Benefits of Automated Networking, by Type of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF IMPORTANCE TO THE LIBRARY
OF BENEFITS/ADVANTAGES OF AUTOMATION AT A REGIONAL AND STATEWIDE LEVEL,
BY TYPE OF LIBRARY, 1985

	Type of Library										
Benefits of Automated Networking	Public	Institutional	State Supported	Community College	Private University & College	School	State & Local Government	Federal Government	Other	Unknown	All
Access to holdings data of other libraries	4.3	4.3	4.9	4.7	4.7	4.3	4.2	4.4	4.5	4.3	4.4
Subject access to materials	4.0	3.8	4.4	4.2	4.2	4.2	3.8	3.9	4.0	3.5	4.1
Resource sharing	3.9	4.1	4.5	4.4	4.3	4.3	3.3	4.2	3.9	4.0	4.1
Improved delivery services	3.3	3.4	3.8	3.5	4.1	3.8	2.5	3.8	3.3	3.5	3.5
Improved efficiency of operations	3.7	3.7	3.5	3.6	4.0	3.7	3.3	3.8	3.5	3.8	3.7
Improved effectiveness to patrons	4.3	3.8	4.3	4.5	4.7	4.2	4.2	4.5	4.1	3.5	4.3
Potential to access remote union catalog	3.5	3.0	4.1	4.0	4.0	3.4	3.5	4.2	3.5	3.5	3.6
Improved information services	4.0	3.8	4.2	4.0	4.4	4.2	4.0	4.4	4.1	4.5	4.1
Shared expertise and experience	3.7	4.1	3.6	3.5	3.7	4.0	3.2	3.6	3.6	3.5	3.7
Improved communications among libraries	3.7	3.6	4.1	3.8	4.2	3.9	3.0	4.3	3.4	3.5	3.8
Improved management of resources	3.7	3.7	3.8	3.8	3.8	4.0	3.2	3.6	3.4	3.5	3.7
Other	1.0	-	-	-	-	-	-	-	-	-	1.0

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 46B

Benefits of Automated Networking, by Size of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF IMPORTANCE TO THE LIBRARY
OF BENEFITS/ADVANTAGES OF AUTOMATION AT A REGIONAL AND STATEWIDE LEVEL,
BY SIZE OF LIBRARY, 1985

	Size of Library (Volumes/items)					
Benefits of Automated Networking	< 10,000	10,000-99,999	100,000-500,000	> 500,000	Unknown	All
Access to holdings data of other libraries	3.7	4.4	4.7	4.7	4.4	4.4
Subject access to materials	3.6	4.1	4.2	4.3	4.2	4.1
Resource sharing	3.7	4.1	4.4	4.2	4.2	4.1
Improved delivery services	3.2	3.5	3.8	3.5	3.4	3.5
Improved efficiency of operations	3.3	3.7	3.9	3.3	3.7	3.7
Improved effectiveness to patrons	3.7	4.4	4.5	4.2	4.0	4.3
Potential to access remote union catalog	2.7	3.7	3.9	3.5	3.6	3.6
Improved information services	3.8	4.2	4.2	4.0	4.0	4.1
Shared expertise and experience	3.7	3.8	3.7	3.2	3.9	3.7
Improved communications among libraries	3.3	3.8	4.0	3.9	4.1	3.8
Improved management of resources	3.5	3.7	3.9	3.4	3.9	3.7
Other	-	1.0	-	-	-	1.0

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 48C

Benefits of Automated Networking, by Region

AVERAGE RATING (ON A SCALE OF 1-5) OF IMPORTANCE TO THE LIBRARY
OF BENEFITS/ADVANTAGES OF AUTOMATION AT A REGIONAL AND STATEWIDE LEVEL,
BY REGION, 1985

Benefits of Automated Networking	Region						
	Northern	Northwest	Piedmont	Southern	Southwest	Tidewater	All
Access to holdings data of other libraries	4.6	4.5	4.4	4.0	4.4	4.6	4.4
Subject access to materials	4.3	4.1	4.1	3.7	4.0	4.3	4.1
Resource sharing	4.3	4.2	4.0	3.8	4.1	4.4	4.1
Improved delivery services	3.5	3.4	3.5	3.5	3.7	3.6	3.5
Improved efficiency of operations	3.6	3.8	3.4	3.5	3.8	4.1	3.7
Improved effectiveness to patrons	4.4	4.4	4.1	3.9	4.3	4.6	4.3
Potential to access remote union catalog	3.8	3.5	3.5	3.2	3.6	3.9	3.6
Improved information services	4.2	3.9	4.1	3.8	4.3	4.3	4.1
Shared expertise and experience	3.6	3.8	3.7	3.5	4.0	3.7	3.7
Improved communications among libraries	3.9	4.0	3.7	3.6	3.8	3.9	3.8
Improved management of resources	3.8	3.9	3.6	3.6	3.6	3.9	3.7
Other	-	1.0	-	-	-	-	1.0

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 49A

Importance of Issues on Automated Systems/Networks for Inclusion in Formal Networking Plan, by Type of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF IMPORTANCE TO THE LIBRARIES
OF ISSUES RELATING TO DEVELOPMENT OF IN-STATE AUTOMATED SYSTEMS AND NETWORKS
TO BE ADDRESSED IN A FORMAL STATEWIDE NETWORKING PLAN, BY TYPE OF LIBRARY, 1985

	Type of Library										
Issues	Public	Institutional	State Supported	Community College	Private University & College	School	State & Local Government	Federal Government	Other	Unknown	All
Systems security and privacy of files	3.8	3.0	3.7	3.8	3.9	3.6	2.8	2.9	3.6	3.3	3.6
System vulnerability and backup options	4.2	3.1	4.2	4.4	4.4	4.0	3.5	3.4	4.0	3.3	4.0
Selection of automation systems	4.4	3.9	3.8	4.4	4.3	4.3	4.0	4.0	4.1	3.5	4.2
Ownership of automated systems	4.0	3.7	3.3	4.3	4.0	3.9	4.0	3.3	3.8	3.8	3.9
Location of "host" computer	3.8	3.4	3.6	4.2	3.5	4.0	4.0	3.2	3.3	3.0	3.7
Operation and management of "host" computers	4.1	3.3	4.0	4.1	3.9	4.1	3.8	3.6	3.5	3.3	3.9
Document delivery systems	3.4	3.1	3.8	3.5	3.5	3.5	2.8	3.7	3.3	3.0	3.4
Materials booking and scheduling	3.2	3.8	2.5	3.4	3.0	3.7	3.0	3.0	3.2	3.3	3.3
Performance requirements	4.2	3.6	4.5	4.4	4.1	4.0	4.3	3.7	3.8	4.0	4.1
Performance monitoring and evaluation	4.1	3.5	4.2	4.3	4.1	4.0	4.0	3.4	3.9	4.3	4.0
Education and training of staff	4.4	4.3	3.9	4.3	3.8	4.5	4.7	3.4	3.9	4.5	4.2
Education and training of patrons	3.7	4.3	3.5	3.9	3.3	4.0	2.5	2.9	2.7	3.5	3.6
Other	5.0	3.5	5.0	4.6	-	5.0	5.0	3.0	5.0	5.0	4.7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 49B

Importance of Issues on Automated Systems/Networks for Inclusion in Formal Networking Plan, by Size of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF IMPORTANCE TO THE LIBRARIES
OF ISSUES RELATING TO DEVELOPMENT OF IN-STATE AUTOMATED SYSTEMS AND NETWORKS
TO BE ADDRESSED IN A FORMAL STATEWIDE NETWORKING PLAN, BY SIZE OF LIBRARY, 1985

	Size of Library (Volumes/items)					
Issues	< 10,000	10,000-99,999	100,000-500,000	> 500,000	Unknown	All
Systems security and privacy of files	2.9	3.6	3.9	4.2	3.2	3.6
System vulnerability and backup options	3.3	4.1	4.4	4.1	3.5	4.0
Selection of automation systems	3.9	4.3	4.4	4.0	4.1	4.2
Ownership of automated systems	3.7	3.9	4.2	3.6	3.5	3.9
Location of "host" computer	3.7	3.8	3.8	3.5	3.4	3.7
Operation and management of "host" computers	3.6	3.8	4.2	4.2	3.7	3.9
Document delivery systems	3.2	3.4	3.7	3.6	3.2	3.4
Materials booking and scheduling	3.5	3.4	3.2	2.6	3.6	3.3
Performance requirements	3.8	4.0	4.3	4.5	3.9	4.1
Performance monitoring and evaluation	3.7	3.9	4.3	4.3	3.7	4.0
Education and training of staff	4.4	4.2	4.3	3.9	4.3	4.2
Education and training of patrons	3.3	3.6	3.8	3.2	4.0	3.6
Other	5.0	4.3	5.0	5.0	3.5	4.7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 49C

Importance of Issues on Automated Systems/Networks for Inclusion in Formal Networking Plan, by Region

AVERAGE RATING (ON A SCALE OF 1-5) OF IMPORTANCE TO THE LIBRARIES
OF ISSUES RELATING TO DEVELOPMENT OF IN-STATE AUTOMATED SYSTEMS AND NETWORKS
TO BE ADDRESSED IN A FORMAL STATEWIDE NETWORKING PLAN, BY REGION, 1985

	Region						
Issues	Northern	Northwest	Piedmont	Southern	Southwest	Tidewater	All
Systems security and privacy of files	3.8	3.3	3.7	3.2	3.9	3.7	3.6
System vulnerability and backup options	4.1	3.9	3.8	3.9	4.4	4.2	4.0
Selection of automation systems	4.2	4.1	4.0	4.5	4.2	4.4	4.2
Ownership of automated systems	3.9	3.6	4.0	3.9	3.8	4.0	3.9
Location of "host" computer	3.8	3.6	3.7	3.7	3.7	3.8	3.7
Operation and management of "host" computers	3.8	4.0	3.8	3.9	3.8	4.1	3.9
Document delivery systems	3.5	3.3	3.6	3.3	3.4	3.5	3.4
Materials booking and scheduling	3.5	3.1	3.4	3.2	3.2	3.3	3.3
Performance requirements	4.1	3.9	4.0	4.1	4.0	4.4	4.1
Performance monitoring and evaluation	4.1	3.8	4.0	3.9	4.0	4.3	4.0
Education and training of staff	4.3	4.1	4.2	4.2	4.4	4.2	4.2
Education and training of patrons	3.6	3.5	3.4	3.9	3.7	3.7	3.6
Other	4.5	5.0	4.3	5.0	4.3	5.0	4.7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 50A

Automation Concerns, by Type of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF CONCERNS
REGARDING AUTOMATION, BY TYPE OF LIBRARY, 1985

	Type of Library										
Concerns	Public	Institutional	State Supported	Community College	Private University & College	School	State & Local Government	Federal Government	Other	Unknown	All
Increased workload	3.3	3.3	3.8	3.9	3.3	3.8	3.5	3.5	3.6	3.3	3.5
Reduction in staff	2.2	2.4	2.7	2.3	2.8	2.6	3.3	2.1	2.0	2.3	2.4
Lack of technical expertise	3.7	3.9	3.2	4.1	3.4	3.7	4.0	2.8	3.4	4.3	3.7
Communications costs	4.3	4.3	4.2	4.3	4.5	4.1	4.0	4.0	4.0	4.5	4.2
Start-up costs	4.4	4.4	3.8	4.5	4.7	4.5	4.5	3.9	4.3	5.0	4.4
Continuation costs	4.4	4.5	4.4	4.4	4.6	4.2	4.5	3.6	4.3	4.5	4.4
Reliability	4.2	3.6	4.4	4.3	4.3	3.8	2.8	4.3	4.0	4.0	4.0
Data/record security from unauthorized modification/deletion	3.8	3.3	4.0	3.8	3.7	3.5	3.0	3.8	3.6	4.3	3.7
Data/record privacy	3.4	3.0	3.3	3.4	3.3	3.1	3.3	3.3	3.2	3.5	3.3
Compatibility with other systems	4.0	3.8	4.4	4.2	4.0	4.1	4.0	4.0	3.9	4.5	4.1
Choice of most appropriate system to best meet your library needs	4.5	4.3	4.1	4.5	4.2	4.3	4.7	4.3	4.2	4.8	4.3
Obsolescence	3.6	3.3	3.3	3.9	3.7	3.6	4.0	3.8	3.6	3.5	3.6
Training for staff and patrons	4.2	4.3	3.6	4.3	3.4	4.2	4.0	3.7	3.4	3.5	4.0
Other	5.0	-	5.0	5.0	-	5.0	-	-	-	5.0	5.0

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 50B

Automation Concerns, by Size of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF CONCERNS
REGARDING AUTOMATION, BY SIZE OF LIBRARY, 1985

	Size of Library (Volumes/items)					
Concerns	< 10,000	10,000-99,999	100,000-500,000	> 500,000	Unknown	All
Increased workload	3.8	3.3	3.8	3.4	3.6	3.5
Reduction in staff	2.3	2.3	2.6	2.5	2.6	2.4
Lack of technical expertise	4.0	3.7	3.6	3.2	3.4	3.7
Communications costs	4.3	4.2	4.4	4.1	3.9	4.2
Start-up costs	4.4	4.5	4.5	4.0	4.2	4.4
Continuation costs	4.4	4.4	4.5	4.2	4.0	4.4
Reliability	3.6	4.0	4.4	4.2	3.8	4.0
Data/record security from unauthorized modification/deletion	3.2	3.6	4.1	4.0	3.3	3.7
Data/record privacy	2.9	3.2	3.5	3.7	3.0	3.3
Compatibility with other systems	3.6	3.9	4.3	4.5	4.2	4.1
Choice of most appropriate system to best meet your library needs	4.2	4.3	4.6	4.1	4.3	4.3
Obsolescence	3.6	3.6	3.8	3.1	3.7	3.6
Training for staff and patrons	4.2	4.0	4.0	3.8	4.0	4.0
Other	-	5.0	5.0	5.0	5.0	5.0

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 50C

Automation Concerns, by Region

AVERAGE RATING (ON A SCALE OF 1-5) OF CONCERNS
REGARDING AUTOMATION, BY REGION, 1985

	Region						
Concerns	Northern	Northwest	Piedmont	Southern	Southwest	Tidewater	All
Increased workload	3.6	3.6	3.6	3.4	3.5	3.4	3.5
Reduction in staff	2.4	2.2	2.3	2.6	2.8	2.3	2.4
Lack of technical expertise	3.4	3.5	3.4	3.8	3.9	3.9	3.7
Communications costs	4.1	4.1	4.3	4.5	4.1	4.3	4.2
Start-up costs	4.0	4.6	4.3	4.7	4.3	4.4	4.4
Continuation costs	4.0	4.5	4.4	4.4	4.2	4.5	4.4
Reliability	4.2	3.9	3.8	4.2	4.1	4.2	4.0
Data/record security from unauthorized modification/deletion	3.8	3.4	3.6	4.0	3.4	3.9	3.7
Data/record privacy	3.3	3.2	3.2	3.2	3.1	3.5	3.3
Compatibility with other systems	4.1	4.1	4.1	4.2	3.8	4.1	4.1
Choice of most appropriate system to best meet your library needs	4.6	4.6	4.1	4.4	4.0	4.5	4.3
Obsolescence	3.6	3.6	3.6	3.8	3.2	3.9	3.6
Training for staff and patrons	4.0	4.0	3.7	4.2	4.1	4.1	4.0
Other	-	5.0	-	5.0	-	5.0	5.0

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 51A

Preferred Role in Statewide Plan, by Type of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF THE PREFERRED ROLE OF THE LIBRARY
IN A STATEWIDE RESOURCE SHARING AND AUTOMATION PLAN, BY TYPE OF LIBRARY, 1985

	Type of Library										
Role in Statewide Plan	Public	Institutional	State Supported	Community College	Private University & College	School	State & Local Government	Federal Government	Other	Unknown	All
As an owner of an in-house automated system	3.4	3.0	4.4	3.9	3.3	3.2	3.4	2.1	3.0	3.7	3.3
As a user of another library's system	2.6	2.8	2.0	2.8	3.1	3.0	3.4	3.1	3.5	2.7	2.9
As co-owner of a system	2.7	1.8	2.0	3.1	3.0	2.5	2.4	1.3	1.9	2.7	2.4
As a user of a consortium system	3.3	2.8	2.4	4.1	4.1	3.9	3.4	3.3	3.4	3.3	3.5
As a user of a statewide system	4.1	3.8	3.1	4.2	4.4	3.9	3.8	3.8	3.6	3.7	3.9
As a "host" for other libraries	2.0	1.6	2.3	1.8	2.6	2.2	1.6	1.0	2.1	2.3	2.0
No role at all in a statewide plan	1.6	1.7	1.5	1.7	1.3	1.8	1.0	2.4	1.8	1.3	1.7
Other	5.0	-	4.0	5.0	-	-	-	-	5.0	-	4.8

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 51B

Preferred Role in Statewide Plan, by Size of Library

AVERAGE RATING (ON A SCALE OF 1-5) OF THE PREFERRED ROLE OF THE LIBRARY
IN A STATEWIDE RESOURCE SHARING AND AUTOMATION PLAN, BY SIZE OF LIBRARY, 1985

	Size of Library (Volumes/items)					
Role in Statewide Plan	< 10,000	10,000-99,999	100,000-500,000	> 500,000	Unknown	All
As an owner of an in-house automated system	2.3	3.2	3.7	4.2	3.3	3.3
As a user of another library's system	3.1	3.2	2.6	1.7	3.0	2.9
As co-owner of a system	2.0	2.6	2.8	1.9	2.1	2.4
As a user of a consortium system	3.0	3.6	3.7	2.6	3.7	3.5
As a user of a statewide system	3.7	4.1	4.1	3.4	3.8	3.9
As a "host" for other libraries	1.7	2.0	2.3	2.4	1.8	2.0
No role at all in a statewide plan	2.0	1.6	1.4	1.8	2.2	1.7
Other	-	5.0	4.0	-	5.0	4.8

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 51C

Preferred Role in Statewide Plan, by Region

AVERAGE RATING (ON A SCALE OF 1-5) OF THE PREFERRED ROLE OF THE LIBRARY IN A STATEWIDE RESOURCE SHARING AND AUTOMATION PLAN, BY REGION, 1985

	Region						
Role in Statewide Plan	Northern	Northwest	Piedmont	Southern	Southwest	Tidewater	All
As an owner of an in-house automated system	3.6	3.2	3.2	3.2	3.4	3.6	3.3
As a user of another library's system	2.8	3.0	2.9	2.8	2.7	2.9	2.9
As co-owner of a system	1.9	2.4	2.3	2.6	2.5	2.8	2.4
As a user of a consortium system	3.3	3.5	3.3	3.2	3.7	3.8	3.5
As a user of a statewide system	3.8	4.0	4.0	3.5	4.0	4.2	3.9
As a "host" for other libraries	1.6	2.2	2.0	2.2	2.0	2.1	2.0
No role at all in a statewide plan	2.0	1.6	1.8	1.5	1.7	1.4	1.7
Other	4.0	-	-	5.0	-	5.0	4.8

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 52A

Conditions that Encourage Development of Automated Systems and Networks, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WHICH THINK THAT VARIOUS CONDITIONS
WILL ENCOURAGE THE DEVELOPMENT OF AUTOMATED SYSTEMS AND NETWORKS
IN VIRGINIA, BY TYPE OF LIBRARY, 1985

Type of Library	Availability of Local Funds		Funding Support at State Level		State of Automation in Virginia Libraries		Exposure of Public to Automation		Other	
	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
Public	39	64	55	90	27	44	20	33	6	10
Institutional	13	62	16	76	9	43	5	24	-	-
Academic										
State-Supported	10	56	18	100	10	56	2	11	-	-
Community College	13	68	18	95	13	68	2	11	3	16
Private University & College	16	70	22	96	10	43	5	22	-	-
School	31	57	41	77	26	48	18	33	2	4
Special										
State & Local Government	2	40	5	100	3	60	2	40	-	-
Federal Government	5	56	8	89	3	33	-	-	-	-
Other	11	52	15	75	10	48	2	10	-	-
Unknown	2	50	2	50	3	75	1	25	-	-
All	142	60	200	86	114	49	57	24	11	5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 52B

Conditions that Encourage Development of Automated Systems and Networks, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES THAT THINK THAT VARIOUS CONDITIONS
WILL ENCOURAGE THE DEVELOPMENT OF AUTOMATED SYSTEMS AND NETWORKS
IN VIRGINIA, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Availability of Local Funds (#)	Availability of Local Funds (%)	Funding Support at State Level (#)	Funding Support at State Level (%)	State of Automation in Virginia Libraries (#)	State of Automation in Virginia Libraries (%)	Exposure of Public to Automation (#)	Exposure of Public to Automation (%)	Other (#)	Other (%)
< 10,000	19	63	19	68	15	50	7	23	-	-
10,000 - 99,999	58	57	91	90	50	50	26	26	5	5
100,000 - 500,000	33	61	49	91	26	48	14	26	4	7
> 500,000	15	68	22	100	13	59	3	14	2	9
Unknown	17	61	19	68	10	36	7	25	-	-
All	142	60	200	86	114	49	57	24	11	5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 52C

Conditions that Encourage Development of Automated Systems and Networks, by Region

NUMBER AND PROPORTION OF LIBRARIES THAT THINK THAT VARIOUS CONDITIONS
WILL ENCOURAGE THE DEVELOPMENT OF AUTOMATED SYSTEMS AND NETWORKS
IN VIRGINIA, BY REGION, 1985

Region	Availability of Local Funds (#)	(%)	Funding Support at State Level (#)	(%)	State of Automation in Virginia Libraries (#)	(%)	Exposure of Public to Automation (#)	(%)	Other (#)	(%)
Northern	18	62	27	93	14	48	8	28	3	10
Northwest	20	45	39	89	20	45	9	20	2	5
Piedmont	34	72	40	87	21	45	8	17	-	-
Southern	23	68	27	79	13	38	11	32	2	6
Southwest	24	62	35	90	18	46	13	33	-	-
Tidewater	23	55	32	78	28	67	8	19	4	10
All	142	60	200	86	114	49	57	24	11	5

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 53A

Libraries with Policies that May Discourage Participation in Automation Activities, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES OR THEIR FUNDING AGENCIES WITH POLICIES THAT MAY DISCOURAGE PARTICIPATION IN AUTOMATION ACTIVITIES, BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries	Proportion (%)
Public	1	2
Institutional	3	14
Academic		
State-Supported	2	11
Community College	2	11
Private University & College	1	4
School	-	-
Special		
State & Local Government	3	60
Federal Government	1	11
Other	4	20
Unknown	-	-
All	17	7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 53B

Libraries with Policies that May Discourage Participation in Automation Activities, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES OR THEIR FUNDING AGENCIES WITH POLICIES THAT MAY DISCOURAGE PARTICIPATION IN AUTOMATION ACTIVITIES, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Number of Libraries	Proportion (%)
< 10,000	5	16
10,000 - 99,999	4	4
100,000 - 500,000	3	6
> 500,000	2	9
Unknown	3	13
All	17	7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 53C

Libraries with Policies that May Discourage Participation in Automation Activities, by Region

NUMBER AND PROPORTION OF LIBRARIES OR THEIR FUNDING AGENCIES WITH
POLICIES THAT MAY DISCOURAGE PARTICIPATION IN
AUTOMATION ACTIVITIES, BY REGION, 1985

Region	Number of Libraries	Proportion (%)
Northern	5	18
Northwest	5	12
Piedmont	4	9
Southern	-	-
Southwest	2	5
Tidewater	1	3
All	17	7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 54A

Libraries Citing Other Factors that May Discourage Participation in Automation Activities, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES
CITING OTHER FACTORS THAT MAY DISCOURAGE PARTICIPATION IN
AUTOMATION ACTIVITIES, BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries	Proportion (%)
Public	42	72
Institutional	10	63
Academic		
State-Supported	8	50
Community College	16	94
Private University & College	19	83
School	25	63
Special		
State & Local Government	5	100
Federal Government	3	43
Other	13	62
Unknown	3	75
All	144	70

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 54B

Libraries Citing Other Factors that May Discourage Participation in Automation Activities, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES
CITING OTHER FACTORS THAT MAY DISCOURAGE PARTICIPATION IN
AUTOMATION ACTIVITIES, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Number of Libraries	Proportion (%)
< 10,000	19	76
10,000 - 99,999	72	75
100,000 - 500,000	29	63
> 500,000	13	65
Unknown	11	55
All	144	70

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 54C

Libraries Citing Other Factors that May Discourage Participation in Automation Activities, by Region

NUMBER AND PROPORTION OF LIBRARIES
CITING OTHER FACTORS THAT MAY DISCOURAGE PARTICIPATION IN
AUTOMATION ACTIVITIES, BY REGION, 1985

Region	Number of Libraries	Proportion (%)
Northern	19	73
Northwest	29	74
Piedmont	30	73
Southern	22	76
Southwest	22	63
Tidewater	22	59
All	144	70

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

SECTION 4

DETAILS OF AUTOMATED SYSTEMS

TABLE 55A

Data Communications Capabilities, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES CURRENTLY SUPPORTING COMPUTERIZED FUNCTIONS WITH VARIOUS DATA COMMUNICATIONS CAPABILITIES, BY TYPE OF LIBRARY, 1985

	Hardwire Connection to Computer		Dial-up Telephone Connection		Dedicated Telephone Connection		Microwave Connection		Other Connnection	
Type of Library	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
Public	10	20	12	24	14	27	-	-	1	2
Institutional	-	-	-	-	-	-	-	-	-	-
Academic										
State-Supported	11	73	12	80	11	73	-	-	1	7
Community College	1	6	3	19	4	25	1	6	-	-
Private University & College	3	15	11	55	13	65	-	-	-	-
School	-	-	3	9	1	3	-	-	-	-
Special										
State & Local Government	-	-	-	-	1	20	-	-	-	-
Federal Government	3	23	5	38	2	15	1	8	-	-
Other	5	19	4	15	4	15	-	-	1	4
Unknown	-	-	-	-	1	33	-	-	-	-
All	33	17	50	25	51	26	2	1	3	2

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 55B

Data Communications Capabilities, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES CURRENTLY SUPPORTING COMPUTERIZED FUNCTIONS WITH VARIOUS DATA COMMUNICATIONS CAPABILITIES, BY SIZE OF LIBRARY, 1985

Size of Library (Volumes/items)	Hardwire Connection to Computer		Dial-up Telephone Connection		Dedicated Telephone Connection		Microwave Connection		Other Connection	
	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
< 10,000	1	3	1	3	2	6	-	-	-	-
10,000 - 99,999	5	6	12	14	7	8	-	-	1	1
100,000 - 500,000	15	34	21	48	25	57	1	2	1	2
> 500,000	9	50	13	72	15	83	-	-	1	6
Unknown	3	14	3	14	2	10	1	5	-	-
All	33	17	50	25	51	26	2	1	3	2

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 55C

Data Communications Capabilities, by Region

NUMBER AND PROPORTION OF LIBRARIES CURRENTLY SUPPORTING COMPUTERIZED FUNCTIONS WITH VARIOUS DATA COMMUNICATIONS CAPABILITIES, BY REGION, 1985

Region	Hardwire Connection to Computer (#)	(%)	Dial-up Telephone Connection (#)	(%)	Dedicated Telephone Connection (#)	(%)	Microwave Connection (#)	(%)	Other Connnection (#)	(%)
Northern	12	39	11	35	11	35	2	6	1	3
Northwest	4	12	7	21	8	24	-	-	-	-
Piedmont	3	7	10	24	8	20	-	-	-	-
Southern	5	18	7	25	7	25	-	-	1	4
Southwest	1	3	6	20	8	27	-	-	1	3
Tidewater	8	22	9	25	9	25	-	-	-	-
All	33	17	50	25	51	26	2	1	3	2

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 56A

Title Records in Machine-readable Form, by Type of Library

TOTAL NUMBER OF MACHINE-READABLE TITLE
RECORDS IN FULL MARC FORMAT AND OTHER BIBLIOGRAPHIC
FORMATS FOR ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

Type of Library	Title Records In Full MARC Format	Title Records in Other Formats
Public	2,431,142	25,825
Institutional	-	48
Academic		
State-Supported	2,553,496	2,645,394
Community College	154,935	72,217
Private University & College	674,337	250,227
School	52,000	153,594
Special		
State & Local Government	-	-
Federal Government	131,323	3,178
Other	48,910	46,769
Unknown	173,500	-
All	6,219,643	3,200,252

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 57A

Book/Monograph Title Records in Machine-readable Form, by Type of Library

TOTAL NUMBER OF MACHINE-READABLE BOOK/MONOGRAPH TITLE RECORDS IN FULL MARC FORMAT AND OTHER BIBLIOGRAPHIC FORMATS FOR ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

	Books/Monographs			
	Title Records In Full MARC Format		Title Records in Other Formats	
Type of Library	(#)	(%)*	(#)	(%)**
Public	2,384,950	98	10,840	42
Institutional	-	-	-	-
Academic				
State-Supported	1,762,299	69	702,294	27
Community College	149,859	97	63,585	85
Private University & College	608,258	90	237,500	95
School	25,000	48	129,576	84
Special				
State & Local Government	-	-	-	-
Federal Government	111,323	85	-	-
Other	32,720	67	31,437	67
Unknown	170,000	98	-	-
All	5,244,409	84	1,175,232	37

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

---

*Percentage of all machine-readable records in full MARC format (Table 56A).

**Percentage of all machine-readable records in other formats (Table 56A).

TABLE 58A

Serial Title Records in Machine-readable Form, by Type of Library

TOTAL NUMBER OF MACHINE-READABLE SERIAL TITLE RECORDS IN FULL MARC FORMAT AND OTHER BIBLIOGRAPHIC FORMATS FOR ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

Type of Library	Serials			
	Title Records In Full MARC Format (#)	(%)*	Title Records in Other Formats (#)	(%)**
Public	12,910	1	348	1
Institutional	-	-	25	52
Academic				
State-Supported	24,123	1	52,812	2
Community College	-	-	1,079	1
Private University & College	11,427	2	8,100	3
School	-	-	340	-
Special				
State & Local Government	-	-	-	-
Federal Government	10,000	8	1,300	41
Other	130	-	-	-
Unknown	-	-	-	-
All	58,590	1	64,004	2

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

---

*Percentage of all machine-readable records in full MARC format (Table 56A).

**Percentage of all machine-readable records in other formats (Table 56A).

TABLE 59A

Record/Audiocassette Title Records in Machine-readable Form, by Type of Library

TOTAL NUMBER OF MACHINE-READABLE RECORD/AUDIOCASSETTE TITLE
RECORDS IN FULL MARC FORMAT AND OTHER BIBLIOGRAPHIC
FORMATS FOR ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

	Records/Audiocassettes			
	Title Records In Full MARC Format		Title Records in Other Formats	
Type of Library	(#)	(%)*	(#)	(%)**
Public	23,850	1	9,200	36
Institutional	-	-	6	13
Academic				
State-Supported	15,611	1	19,332	1
Community College	1,870	1	3,184	4
Private University & College	11,201	2	3,050	1
School	-	-	990	1
Special				
State & Local Government	-	-	-	-
Federal Government	-	-	-	-
Other	-	-	-	-
Unknown	3,500	2	-	-
All	56,032	1	35,762	1

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

---

*Percentage of all machine-readable records in full MARC format (Table 56A).

**Percentage of all machine-readable records in other formats (Table 56A).

TABLE 60A

Film/Slide/Kit Title Records in Machine-readable Form, by Type of Library

TOTAL NUMBER OF MACHINE-READABLE FILM/SLIDE/KIT TITLE RECORDS IN FULL MARC FORMAT AND OTHER BIBLIOGRAPHIC FORMATS FOR ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

Type of Library	Films/Slides/Kits: Title Records In Full MARC Format (#)	(%)*	Title Records in Other Formats (#)	(%)**
Public	6,451	-	4,386	17
Institutional	-	-	-	-
Academic				
State-Supported	1,718	-	22,738	1
Community College	3,156	2	6,103	8
Private University & College	4,485	1	750	-
School	-	-	3,029	2
Special				
State & Local Government	-	-	-	-
Federal Government	-	-	1,858	58
Other	25	-	-	-
Unknown	-	-	-	-
All	15,835	-	38,864	1

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

---

*Percentage of all machine-readable records in full MARC format (Table 56A).

**Percentage of all machine-readable records in other formats (Table 56A).

TABLE 61A

Government Document Title Records in Machine-readable Form, by Type of Library

TOTAL NUMBER OF MACHINE-READABLE GOVERNMENT DOCUMENT TITLE RECORDS IN FULL MARC FORMAT AND OTHER BIBLIOGRAPHIC FORMATS FOR ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

	Government Document			
	Title Records In Full MARC Format		Title Records in Other Formats	
Type of Library	(#)	(%)*	(#)	(%)**
Public	706	-	-	-
Institutional	-	-	-	-
Academic				
State-Supported	500	-	1,631,057	62
Community College	50	-	-	-
Private University & College	100	-	-	-
School	-	-	-	-
Special				
State & Local Government	-	-	-	-
Federal Government	-	-	-	-
Other	5,000	10	-	-
Unknown	-	-	-	-
All	6,356	-	1,631,057	51

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

---

*Percentage of all machine-readable records in full MARC format (Table 56A).

**Percentage of all machine-readable records in other formats (Table 56A).

TABLE 62A

Technical Report Title Records in Machine-readable Form, by Type of Library

TOTAL NUMBER OF MACHINE-READABLE TECHNICAL REPORT
TITLE RECORDS IN FULL MARC FORMAT AND OTHER BIBLIOGRAPHIC
FORMATS FOR ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

Type of Library	Technical Report			
	Title Records In Full MARC Format		Title Records in Other Formats	
	(#)	(%)*	(#)	(%)**
Public	-	-	-	-
Institutional	-	-	-	-
Academic				
State-Supported	-	-	-	-
Community College	-	-	-	-
Private University & College	-	-	-	-
School	-	-	-	-
Special				
State & Local Government	-	-	-	-
Federal Government	-	-	-	-
Other	6,000	12	5,332	11
Unknown	-	-	-	-
All	6,000	-	5,332	-

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

---

*Percentage of all machine-readable records in full MARC format (Table 56A).

**Percentage of all machine-readable records in other formats (Table 56A).

TABLE 63A

Microform Title Records in Machine-readable Form, by Type of Library

TOTAL NUMBER OF MACHINE-READABLE MICROFORM TITLE RECORDS IN FULL MARC FORMAT AND OTHER BIBLIOGRAPHIC FORMATS FOR ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

	Microforms			
Type of Library	Title Records In Full MARC Format (#)	(%)*	Title Records in Other Formats (#)	(%)**
Public	50	-	-	-
Institutional	-	-	-	-
Academic				
State-Supported	234,321	9	58,282	2
Community College	-	-	782	1
Private University & College	22,230	3	827	-
School	-	-	-	-
Special				
State & Local Government	-	-	-	-
Federal Government	-	-	20	1
Other	5,035	10	10,000	21
Unknown	-	-	-	-
All	261,636	4	69,911	2

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

---

*Percentage of all machine-readable records in full MARC format (Table 56A).

**Percentage of all machine-readable records in other formats (Table 56A).

TABLE 64A

Computer Software Title Records in Machine-readable Form, by Type of Library

TOTAL NUMBER OF MACHINE-READABLE COMPUTER SOFTWARE TITLE RECORDS IN FULL MARC FORMAT AND OTHER BIBLIOGRAPHIC FORMATS FOR ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

Type of Library	Computer Software Title Records In Full MARC Format (#)	(%)*	Title Records in Other Formats (#)	(%)**
Public	-	-	-	-
Institutional	-	-	17	35
Academic				
State-Supported	-	-	3	-
Community College	-	-	30	-
Private University & College	4	-	-	-
School	-	-	-	-
Special				
State & Local Government	-	-	-	-
Federal Government	-	-	-	-
Other	-	-	-	-
Unknown	-	-	-	-
All	4	-	50	-

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

---

*Percentage of all machine-readable records in full MARC format (Table 56A).

**Percentage of all machine-readable records in other formats (Table 56A).

TABLE 65A

Other Title Records in Machine-readable Form, by Type of Library

TOTAL NUMBER OF MACHINE-READABLE OTHER TITLE RECORDS IN
FULL MARC FORMAT AND OTHER BIBLIOGRAPHIC FORMATS
FORMATS FOR ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

	Other			
Type of Library	Title Records In Full MARC Format (#)	(%)*	Title Records in Other Formats (#)	(%)**
Public	2,225	-	1,051	4
Institutional	-	-	-	-
Academic				
State-Supported	514,924	20	158,876	6
Community College	-	-	454	1
Private University & College	16,632	3	-	-
School	27,000	52	19,659	13
Special				
State & Local Government	-	-	-	-
Federal Government	10,000	8	-	-
Other	-	-	-	-
Unknown	-	-	-	-
All	570,781	9	180,040	6

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

---

*Percentage of all machine-readable records in full MARC format (Table 56A).

**Percentage of all machine-readable records in other formats (Table 56A).

TABLE 66A

Patron Records in Machine-readable Form, by Type of Library

TOTAL NUMBER OF PATRON RECORDS CURRENTLY IN
MACHINE-READABLE FORM FOR ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

Type of Library	Total Number of Patron Records
Public	875,796
Institutional	-
Academic	
State-Supported	132,235
Community College	12,448
Private University & College	637
School	2,108
Special	
State & Local Government	-
Federal Government	-
Other	2,650
Unknown	40,500
All	1,066,374

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 66B

Patron Records in Machine-readable Form, by Size of Library

TOTAL NUMBER OF PATRON RECORDS CURRENTLY IN MACHINE-READABLE FORM FOR ALL LIBRARIES, BY SIZE OF LIBRARY, 1985

Size of Library (Volume/items)	Total Number of Patron Records
< 10,000	-
10,000 - 99,999	20,656
100,000 - 500,000	322,373
> 500,000	721,843
Unknown	1,502
All	1,066,374

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 66C

Patron Records in Machine-readable Form, by Region

TOTAL NUMBER OF PATRON RECORDS CURRENTLY IN MACHINE-READABLE FORM FOR ALL LIBRARIES, BY REGION, 1985

Region	Total Number of Patron Records
Northern	600,119
Northwest	43,250
Piedmont	191,379
Southern	8,850
Southwest	52,583
Tidewater	170,193
All	1,066,374

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 67A

Libraries with Communicating Automated Systems, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES WITH AUTOMATED SYSTEMS
ABLE TO COMMUNICATE WITH OTHER AUTOMATED SYSTEMS,
BY TYPE OF LIBRARY, 1985

Type of Library	Number of Libraries	Proportion (%)
Public	5	19
Institutional	-	-
Academic		
State-Supported	4	27
Community College	1	11
Private University & College	5	38
School	2	15
Special		
State & Local Government	1	100
Federal Government	3	75
Other	4	40
Unknown	-	-
All	25	27

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

430

TABLE 67B

Libraries with Communicating Automated Systems, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES WITH AUTOMATED SYSTEMS ABLE TO COMMUNICATE WITH OTHER AUTOMATED SYSTEMS, BY SIZE OF LIBRARY, 1985

Size of Library (Volume/items)	Number of Libraries	Proportion (%)
< 10,000	2	67
10,000 - 99,999	6	17
100,000 - 500,000	9	26
> 500,000	5	36
Unknown	3	60
All	25	27

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 67C

Libraries with Communicating Automated Systems, by Region

NUMBER AND PROPORTION OF LIBRARIES WITH AUTOMATED SYSTEMS ABLE TO COMMUNICATE WITH OTHER AUTOMATED SYSTEMS, BY REGION, 1985

Region	Number of Libraries	Proportion (%)
Northern	6	43
Northwest	5	28
Piedmont	7	39
Southern	2	22
Southwest	2	12
Tidewater	3	18
All	25	27

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 68A

Satisfaction with Automated Systems, by Type of Library

AVERAGE RATINGS (ON A SCALE OF 1-5) OF SATISFACTION WITH VARIOUS AUTOMATED SYSTEMS FOR ALL LIBRARIES, BY TYPE OF LIBRARY, 1985

Type of Library	Performance Satisfaction
Public	4.0
Institutional	3.0
Academic	
State-Supported	4.3
Community College	4.1
Private University & College	4.1
School	4.0
Special	
State & Local Government	4.0
Federal Government	3.5
Other	4.1
Unknown	4.5
All	4.1

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 68B

Satisfaction with Automated Systems, by Size of Library

AVERAGE RATINGS (ON A SCALE OF 1-5) OF SATISFACTION WITH VARIOUS AUTOMATED SYSTEMS FOR ALL LIBRARIES, BY SIZE OF LIBRARY, 1985

Size of Library (Volume/items)	Performance Satisfaction
< 10,000	3.3
10,000 - 99,999	4.0
100,000 - 500,000	4.1
> 500,000	4.2
Unknown	4.1
All	4.1

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 68C

Satisfaction with Automated Systems, by Region

AVERAGE RATINGS (ON A SCALE OF 1-5) OF SATISFACTION WITH VARIOUS AUTOMATED SYSTEMS FOR ALL LIBRARIES, BY REGION, 1985

Region	Performance Satisfaction
Northern	4.3
Northwest	4.2
Piedmont	4.0
Southern	4.0
Southwest	3.8
Tidewater	4.2
All	4.1

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 69A

Feasibility of "Hosting" Other Libraries' Databases, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES INDICATING FEASIBILITY OF "HOSTING" OTHER LIBRARIES' DATABASES ON THEIR AUTOMATED SYSTEM, BY TYPE OF LIBRARY, 1985

Type of Library	Able to "Host" (#)	Able to "Host" (%)	Not Able to "Host" (#)	Not Able to "Host" (%)	May be Able to "Host" (#)	May be Able to "Host" (%)	Total (#)	Total (%)
Public	6	21	12	43	10	36	28	100
Institutional	-	-	2	100	-	-	2	100
Academic								
State-Supported	2	12	8	47	7	41	17	100
Community College	-	-	7	88	1	13	8	100
Private University & College	2	13	13	81	1	6	16	100
School	-	-	12	71	5	29	17	100
Special								
State & Local Government	-	-	-	-	-	-	-	-
Federal Government	1	17	5	83	-	-	6	100
Other	-	-	12	92	1	8	13	100
Unknown	-	-	-	-	1	100	1	100
All	11	10	71	66	26	24	108	100

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 69B

Feasibility of "Hosting" Other Libraries' Databases, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES INDICATING FEASIBILITY OF
"HOSTING" OTHER LIBRARIES' DATABASES ON THEIR AUTOMATED SYSTEM,
BY SIZE OF LIBRARY, 1985

Type of Library	Able to "Host" (#)	Able to "Host" (%)	Not Able to "Host" (#)	Not Able to "Host" (%)	May be Able to "Host" (#)	May be Able to "Host" (%)	Total (#)	Total (%)
< 10,000	-	-	3	75	1	25	4	100
10,000 - 99,999	1	3	32	78	7	19	40	100
100,000 - 500,000	4	11	25	66	9	24	38	100
> 500,000	5	31	4	25	7	44	16	100
Unknown	1	10	7	70	2	20	10	100
All	11	10	71	66	26	24	108	100

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 69C

Feasibility of "Hosting" Other Libraries' Databases, by Region

NUMBER AND PROPORTION OF LIBRARIES INDICATING FEASIBILITY OF "HOSTING" OTHER LIBRARIES' DATABASES ON THEIR AUTOMATED SYSTEM, BY REGION, 1985

Type of Library	Able to "Host" (#)	Able to "Host" (%)	Not Able to "Host" (#)	Not Able to "Host" (%)	May be Able to "Host" (#)	May be Able to "Host" (%)	Total (#)	Total (%)
Northern	4	21	7	37	8	42	19	100
Northwest	1	5	15	68	6	27	22	100
Piedmont	4	22	12	67	2	11	18	100
Southern	-	-	11	92	1	8	12	100
Southwest	1	6	15	88	1	6	17	100
Tidewater	1	5	11	55	8	40	20	100
All	11	8	71	67	26	25	108	100

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 70A

Potential "Hosting" Problems, by Type of Library

NUMBER AND PROPORTION OF LIBRARIES THAT THINK THEY
MAY ENCOUNTER VARIOUS PROBLEMS IF THEY WERE TO "HOST" OTHER LIBRARIES'
DATABASES, BY TYPE OF LIBRARY, 1985

	Various Problems															
	Response Time Degradation		Insufficient Terminal Communications Capacity		Prioritization of Workloads		Security and Privacy of files		Responsibility to meet Ownership of data		Performance Criteria		Cost Allocation		Other	
Type of Library	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
Public	17	33	13	25	14	27	12	23	9	17	13	25	16	31	5	10
Institutional	-	-	-	-	-	-	-	-	-	-	-	-	1	5	-	-
Academic																
State-Supported	10	71	9	64	11	79	3	21	3	21	10	71	10	71	1	7
Community College	2	14	2	14	1	7	-	-	-	-	-	-	3	21	2	14
Private University & College	6	29	13	62	10	48	5	24	4	19	6	29	11	52	3	14
School	2	5	6	16	8	22	2	5	1	3	8	22	6	16	2	5
Special																
State & Local Government	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Federal Government	2	18	3	27	2	18	2	18	1	9	2	18	1	9	-	-
Other	2	8	4	17	4	17	6	25	2	8	2	8	6	25	-	-
Unknown	1	25	1	25	1	25	1	25	1	25	1	25	2	50	-	-
All	42	21	51	25	51	25	31	15	21	10	42	21	56	28	13	6

SOURCE: King Research Survey of Virginia Libraries (n=329)

TABLE 70B

Potential "Hosting" Problems, by Size of Library

NUMBER AND PROPORTION OF LIBRARIES THAT THINK THEY
MAY ENCOUNTER VARIOUS PROBLEMS IF THEY WERE TO "HOST" OTHER LIBRARIES'
DATABASES, BY SIZE OF LIBRARY, 1985

Size of Library (Volume/items)	Various Problems															
	Response Time Degradation		Insufficient Terminal Communications Capacity		Prioritization of Workloads		Security and Privacy of files		Respon-sibility to meet Ownership of data		Performance Criteria		Cost Allocation		Other	
	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
< 10,000	1	3	1	3	-	-	1	3	1	3	1	3	1	3	-	-
10,000 - 99,999	12	14	17	20	14	16	10	11	4	5	9	10	15	17	6	7
100,000 - 500,000	16	36	22	49	21	47	13	29	10	22	17	38	26	58	5	11
> 500,000	11	73	9	60	12	80	3	20	4	27	11	73	11	73	2	13
Unknown	2	9	2	9	4	18	4	18	2	9	4	18	3	14	-	-
All	42	21	51	25	51	25	31	15	21	10	42	21	56	28	13	6

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 70C

Potential "Hosting" Problems, by Region

NUMBER AND PROPORTION OF LIBRARIES THAT THINK THEY
MAY ENCOUNTER VARIOUS PROBLEMS IF THEY WERE TO "HOST" OTHER LIBRARIES'
DATABASES, BY REGION, 1985

Region	Various Problems															
	Response Time Degradation		Insufficient Terminal Communications Capacity		Prioritization of Workloads		Security and Privacy of files		Responsibility to meet Ownership of data		Performance Criteria		Cost Allocation		Other	
	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)	(#)	(%)
Northern	10	33	8	27	11	37	7	23	5	17	11	37	9	30	2	7
Northwest	7	19	11	31	11	31	5	14	3	8	6	17	9	25	3	8
Piedmont	4	11	5	14	7	20	3	9	2	6	5	14	7	20	2	6
Southern	4	14	7	24	4	14	1	3	1	3	3	10	6	21	3	10
Southwest	8	25	7	22	10	31	5	16	4	13	7	22	10	31	1	3
Tidewater	9	23	13	33	8	21	10	26	6	15	10	26	15	38	2	5
All	42	21	51	25	51	25	31	15	21	10	42	21	56	28	13	6

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 71A

Readiness for Hosting, by Type of Library

AVERAGE RATING (ON A SCALE OF 1-7) OF LIBRARIES' CURRENT STATE OF READINESS TO SUPPORT OTHER LIBRARIES' DATABASES, BY TYPE OF LIBRARY, 1985

Type of Library	Current State of Readiness
Public	2.4
Institutional	4.5
Academic	
State-Supported	2.2
Community College	1.9
Private University & College	2.1
School	4.3
Special	
State & Local Government	-
Federal Government	2.0
Other	1.8
Unknown	5.0
All	2.7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

445

TABLE 71B

Readiness for Hosting, by Size of Library

AVERAGE RATING (ON A SCALE OF 1-7) OF LIBRARIES' CURRENT STATE OF
READINESS TO SUPPORT OTHER LIBRARIES' DATABASES,
BY SIZE OF LIBRARY, 1985

Size of Library (Volume/items)	Current State of Readiness
< 10,000	4.7
10,000 - 99,999	2.3
100,000 - 500,000	1.9
> 500,000	3.0
Unknown	4.3
All	2.7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

TABLE 71C

Readiness for Hosting, by Region

AVERAGE RATING (ON A SCALE OF 1-7) OF LIBRARIES' CURRENT STATE OF
READINESS TO SUPPORT OTHER LIBRARIES' DATABASES,
BY REGION, 1985

Region	Current State of Readiness
Northern	2.0
Northwest	2.4
Piedmont	2.5
Southern	3.5
Southwest	2.5
Tidewater	3.1
All	2.7

SOURCE: King Research, Inc. Survey of Virginia Libraries (n=329)

447

APPENDIX C

QUESTIONNAIRE

SURVEY OF
AUTOMATION AND NETWORKING
IN THE COMMONWEALTH OF VIRGINIA

SPRING 1985

Library Name and Address:

(Coded address label to be
affixed in this position)

(Please correct the library name and address, if required)

PLEASE MAIL BY JUNE 19, 1985 TO:

KING RESEARCH, INC.
6000 EXECUTIVE BOULEVARD
SUITE 200
ROCKVILLE, MARYLAND 20852

(301) 881-6766

THIS SURVEY INSTRUMENT IS DIVIDED INTO FOUR
SEPARATE SECTIONS TO FACILITATE COMPLETION.
THE FOUR SECTIONS ARE:

SECTION 1: LIBRARY RESOURCES
SECTION 2: LIBRARY COOPERATION AND NETWORKING
SECTION 3: GENERAL AUTOMATION
SECTION 4: DETAILS OF AUTOMATED SYSTEMS

GENERAL INSTRUCTIONS:

1. Please respond to all questions; indicate "NA" if not applicable.

2. In those questions requiring a rated response, circle the most appropriate number on the scale.

3. In reporting statistical data, supply annual statistics for calendar year 1984 or for fiscal year 1983/84.

4. If you have a number of individual/branch libraries under your administrative control, please provide statistical totals for the entire library system, unless specified otherwise.

5. If you do not collect some of the specific statistics requested in this survey, please provide an estimate of annual activity for your library/library system. Please identify each estimate with "(est.)".

6. In reporting data on your collection, please provide statistics in terms of the categories your library normally uses for record keeping (e.g., monographs, serials, etc.) Report any categories not listed under "Other", and supply requested data for each additional category identified.

7. If you need more room to respond to any question, continue on a separate sheet of paper, indicating both the section number and the question number.

8. Please complete all four sections and mail to King Research by June 19, 1985.

SECTION 1

LIBRARY RESOURCES AND ACTIVITIES

1. What is the primary source of funding for your library? (Circle the appropriate number.)

Federal government.. 1

State government.. 2

Local government.. 3

Private sources... 4

2. What is the organizational structure of the library/library system that you administer? (Circle the appropriate number.)

Single library.. 1

Main library with branch libraries........................ 2

number of branches: (2a) ____________________

Group of libraries.. 3

number of libraries: (3a) ____________________

number of branches: (3b) ____________________

Other (Please specify): ____________________

____

____

____

____ 4

3. Are your library's collection(s) and services available for use without restriction? (Circle the appropriate number.)

Yes.. 1

No... 2

[If "No"] Please explain any service or lending restrictions which apply.

____

____

____

____

____

4. How many circulation check-out locations does your library/library system have? Please count each point of service (e.g., main circulation desk, children's circulation desk, reserve room desk, special collections circulation desk, each bookmobile, etc.).

Total number of check-out locations: ______________________

5. Does your library/library system have centralized acquisitions processing? (order generation, receipt processing, etc.)

Yes.. 1

No... 2

[If "No"] Please specify the number of separate acquisitions units: (5a)______________

6. Does your library/library system have a centralized cataloging unit?

Yes.. 1

No... 2

[If "No"] Please specify the number of separate cataloging units: (6a)______________

7. What is your statistical reporting year? Please specify month/day to month/day.

Reporting year:______________________________

8. What is your fiscal year? Please specify month/day to month/day.

Fiscal year:_________________________________

9. How large is your library's collection? Please use the latest set of statistics that you have gathered and indicate date. On the following page, please specify both the number of titles held, as well as the total number of volumes held.

Please provide estimates if records are not kept.

[Note: If you have an outstanding collection in a particular area, please specify that information (including total titles and volumes) in the "Other" category. Please do not include that numerical data elsewhere in question #9.]

Collection statistics as of____

9. (continued)

(Please provide estimates if records are not kept.)

Type of Material	Number of Titles Held	Number of Volumes Held
Books/Monographs*	a1.	a2.
Serials (periodicals, newspapers, etc)	b1.	b2.
Audiovisuals	▨	▨
Records/audiocassettes/etc.	c1.	c2.
Films/slides/kits/etc.	d1.	d2.
Government documents	e1.	e2.
Technical reports	f1.	f2.
Microforms (both monograph and serial)	g1.	g2.
Computer software	h1.	h2.
Other (please specify)	i1.	i2.
	j1.	j2.
	k1.	k2.
	l1.	k1.
	m1.	m2.
	n1.	n2.

---

* Includes all adult and juvenile fiction and non-fiction

10. How many titles and volumes did you acquire during the last year? (Please provide estimates if records are not kept.)

Type of Material	Titles Acquired	Volumes Acquired
Books/Monographs*	a1.	a2.
Serials (periodicals, newspapers, etc)	b1.	b2.
Audiovisuals	▨	▨
Records/audiocassettes/etc.	c1.	c2.
Films/slides/kits/etc.	d1.	d2.
Government documents	e1.	e2.
Technical reports	f1.	f2.
Microforms (both monograph and serial)	g1.	g2.
Computer software	h1.	h2.
Other (please specify)	i1.	i2.
	j1.	j2.
	k1.	k2.
	l1.	l2.
	m1.	m2.
	n1.	n2.

11. What is the general status of collection development activity at your library? (Circle one)

Fairly steady level of annual acquisitions..............	1
Major effort to establish the collection or to build up the collection (or parts of it)......................	2
Other (Please specify): ______________________________ ______________________________ ______________________________	3

12. How many titles and volumes did you catalog during the last year? What is your present uncataloged backlog? (please provide estimates if records are not kept.)

Type of Material	Titles Cataloged	Volumes Cataloged	Titles in Uncataloged Backlog
Books/Monographs	a1.	a2.	a3.
Serials (periodicals, newspapers, etc.)	b1.	b2.	b3.
Audiovisuals	▨	▨	▨
Records/audio-cassettes/etc.	c1.	c2.	c3.
Films/slides/kits/etc.	d1.	d2.	d3.
Government documents	e1.	e2.	e3.
Technical reports	f1.	f2.	f3.
Microforms (both monograph and serial)	g1.	g2.	g3.
Computer software	h1.	h2.	h3.
Other (please specify)	i1.	i2.	i3.
	j1.	j2.	j3.
	k1.	k2.	k3.
	l1.	l2.	l3.
	m1.	m2.	m3.
	n1.	n2.	n3.

13. What types of materials generally are not cataloged before they are added to your library's collection(s)? Do you prepare/update any brief record(s) to indicate the location of these individual items in your collection? (Please specify type of material not cataloged and circle appropriate response for "Yes" or "No" in both columns.)

Please specify:

Type of Material Not Cataloged	Individual Brief Records Created		Existing Records Updated	
	YES	NO	YES	NO
a.	1	2	1	2
b.	1	2	1	2
c.	1	2	1	2
d.	1	2	1	2
e.	1	2	1	2
f.	1	2	1	2
g.	1	2	1	2
h.	1	2	1	2
i.	1	2	1	2
j.	1	2	1	2

14. How many patrons do you have registered? [Patron registration is creation and retention of a formal record for each patron who uses the library.] If you do not register patrons, supply the size (estimated or actual) of your patron group (i.e., those who actually use your library).

Registered patrons: (14a)____________________

[If patrons are not registered]
actual users (estimated): (14b)____________

eligible population (estimated): (14c)____________

15. How many items did your library/library system check out during the last year? (Please include interlibrary loans for which the actual item was supplied and reserve room materials.)

Total number of items checked out:____________________________

16. What was the total number of paid staff in your library/library system during calendar year 1984 (or FY 1983/84)?

	Total No. Staff	Total FTE's**
Paid professional* staff	a1.	a2.
All other paid staff	b1.	b2.

17. What was the total number of volunteer hours staff in your library/library system during calendar year 1984 (or FY 1983/84)?

Volunteer hours:__________________

---

* Professional Staff = Staff with professional status, including benefits, who may or may not have a graduate library degree.

** FTE's = Full time equivalents. (Please indicate decimal equivalents for less than full-time staffing.)

18. How many interlibrary loan **requests** did you **send** to other libraries during the last annual reporting period?

18a. Requests to in-state libraries ________

18b. Requests to out-of-state libraries ________

19. How many **items** were you successful in **borrowing/receiving** from other libraries during the last annual reporting period?

19a. Items borrowed from in-state libraries ________

19b. Photocopies received from in-state libraries ________

19c. Items borrowed from out-of-state libraries ________

19d. Photocopies received from out-of-state libraries ________

20. From which three in-state libraries does your library most frequently obtain materials on interlibrary loan? Please list the most frequently used source first.

Supplier #1 ____

Supplier #2 ____

Supplier #3 ____

21. How many interlibrary loan **requests** were **sent to you** by other libraries during the last annual reporting period?

21a. Requests from in-state libraries ________

21b. Requests from out-of-state libraries ________

22. How many **items** did you **loan** to other libraries and how many photocopied documents did you send during the last annual reporting period?

22a. Items loaned to in-state libraries ________

22b. Photocopies sent to in-state libraries ________

22c. Items loaned to out-of-state libraries ________

22d. Photocopies sent to out-of-state libraries ________

SECTION 2

LIBRARY COOPERATION AND NETWORKING

In this survey we use the following definitions for "cooperative activities" and "networking". **Cooperative activities** are those mutually-beneficial activities which a group of libraries collectively agree to pursue, through formal or informal arrangements. These activities usually do not involve large scale computer networks. **Networking activities** are those cooperative activities which provide service linkages among participating libraries. These activities may be based on formal or informal arrangements and may or may not involve information exchange from computerized databases via telecommunications channels. Automated networks usually are formal networks.

1. Does your library currently engage in any formal and/or informal cooperative and networking activities with other libraries? (Circle the appropriate number.)

Yes..	1
No...	2

[If "No", skip to Question 4.]

1a. Please list all cooperative and networking activities (for example, ILL, shared cataloging data, union list production, etc.) your library participates in with other in-state libraries. For each activity listed, indicate the primary method of communication used (for example, ALA ILL form, OCLC/ILL, electronic mail, phone, personal contact, etc.).

____

____

____

____

____

____

____

1b. Please list all cooperative and networking activities (for example, ILL, shared cataloging data, union list production, etc.) your library participates in with out-of-state libraries. For each activity listed, indicate the primary method of communication used (for example, ALA ILL form, OCLC/ILL, electronic mail, phone, personal contact, etc.).

____

____

____

____

____

____

2. What do you consider to be the major benefits or advantages of your current participation in cooperative and networking activities? (Circle one or more numbers.)

Access to greater resources.................	1
Improved service to patrons.................	2
Convenience..................................	3
Cost savings.................................	4
Space savings................................	5
Increased communications among libraries....	6
Labor savings................................	7
Other (please specify) ________________ ______________________________ ______________________________...	8

3. Have any of the formal and/or informal cooperative and networking activities you have participated in been unsuccessful in any way?

Yes..	1
No...	2

[If "Yes"] Please state which activities and why you think they were somewhat or completely unsuccessful; indicate if they were in-state or out-of-state activities.

____

____

____

____

____

4. What immediate needs do your library and patrons have which could be supported through participation in current and potential in-state resource sharing and cooperative activities?

5. How do you think an in-state resource sharing network of libraries could support these needs?

6. Many functions/services can be offered through a library network or cooperative arrangements. Please rate (on a scale of 1-5) each of the following existing or potential network functions/services in terms of general importance to your library and its patrons. (Please circle the appropriate number for each function/service.)

Function/Service	Not Important 1	2	3	4	Very Important 5
a. Union catalogs	1	2	3	4	5
b. Union lists of serials	1	2	3	4	5
c. Union lists of audio-visuals	1	2	3	4	5
d. Information retrieval (including database searching)	1	2	3	4	5
e. Interlibrary loan	1	2	3	4	5
f. Reciprocal borrowing	1	2	3	4	5
g. Document delivery services	1	2	3	4	5
h. Materials booking and scheduling	1	2	3	4	5
i. Shared staff expertise	1	2	3	4	5
j. Shared cataloging	1	2	3	4	5
k. Cooperative purchasing	1	2	3	4	5
l. Cooperative collection development	1	2	3	4	5
m. Continuing education for staff	1	2	3	4	5

(6. continued)

	Not Important				Very Important
Function/Service	1	2	3	4	5
n. Shared communications systems	1	2	3	4	5
o. Shared storage and warehousing	1	2	3	4	5
p. Shared consultant services	1	2	3	4	5
q. Cooperative research and development	1	2	3	4	5
r. Cooperative market research, user studies	1	2	3	4	5
s. Joint public relations programs	1	2	3	4	5
t. Publishing of union lists, specialized bibliographies, etc.	1	2	3	4	5
u. Index of local, regional, state publications	1	2	3	4	5
Other (please specify)					
v. ______________________________	1	2	3	4	5
w. ______________________________	1	2	3	4	5
x. ______________________________	1	2	3	4	5
y. ______________________________	1	2	3	4	5

7. What issues relating to cooperative activities and networking do you think should be addressed in a formal statewide plan for library automation and networking? Please rate each issue in terms of importance to your library on a scale of 1-5. (Please circle the appropriate number for each issue.)

Issues to Include in Formal Plan	Not Important 1	2	3	4	Very Important 5
a. Membership and role of individual types of libraries in a statewide network	1	2	3	4	5
b. Membership and role of individual types of libraries in regional consortia	1	2	3	4	5
c. Governance of the network	1	2	3	4	5
d. Structure of the network	1	2	3	4	5
e. Costs and pricing	1	2	3	4	5
f. Sources of funding	1	2	3	4	5
g. Hardware requirements	1	2	3	4	5
h. Performance requirements	1	2	3	4	5
i. Performance monitoring and evaluation	1	2	3	4	5
j. Staff training at the local level	1	2	3	4	5
k. Other (please specify) ____________	1	2	3	4	5
l. ______________________	1	2	3	4	5
m. ______________________	1	2	3	4	5
n. ______________________	1	2	3	4	5

8. Do you think that development of a formal statewide plan for networking and resource sharing will cause existing cooperative efforts and networks to improve, remain the same, or deteriorate? (Circle one.)

Improve....................................	1
Remain the same............................	2
Deteriorate................................	3

Please comment

9. What do you think are the conditions that will encourage the development of in-state interlibrary cooperation and resource sharing? Please rate these conditions in terms of importance, on a scale of 1-5. (Please circle the appropriate number for each condition.)

Conditions that Encourage Cooperation	Not Important 1	2	3	4	Very Important 5
a. Willingness to share	1	2	3	4	5
b. Funding and support at the state level	1	2	3	4	5
c. Availability of funding	1	2	3	4	5
d. Local or institutional support	1	2	3	4	5
e. Improved performance	1	2	3	4	5
f. Improved effectiveness to patrons	1	2	3	4	5
g. Existing cooperative activities	1	2	3	4	5
Other (please specify)					
h. ______________________________	1	2	3	4	5
i. ______________________________	1	2	3	4	5
j. ______________________________	1	2	3	4	5
k. ______________________________	1	2	3	4	5
l. ______________________________	1	2	3	4	5
m. ______________________________	1	2	3	4	5

10. What do you think are the conditions that will inhibit the development of in-state interlibrary cooperation and resource sharing? Please rate these conditions in terms of their perceived importance on a scale of 1-5. (Please circle the appropriate number for each condition.)

Conditions that Inhibit Cooperation	Not Inhibiting 1	2	3	4	Very Inhibiting 5
a. Lack of funding	1	2	3	4	5
b. Uncooperative attitude	1	2	3	4	5
c. Lack of support at the state level	1	2	3	4	5
d. Lack of local or institutional support	1	2	3	4	5
e. Unpreparedness of libraries in the state	1	2	3	4	5
f. Insufficient personnel	1	2	3	4	5
Other (please specify)					
g. ______________________________	1	2	3	4	5
h. ______________________________	1	2	3	4	5
i. ______________________________	1	2	3	4	5
j. ______________________________	1	2	3	4	5
k. ______________________________	1	2	3	4	5
l. ______________________________	1	2	3	4	5
m. ______________________________	1	2	3	4	5

11. Does your library or your institution have any policies that may discourage your participation in interlibrary resource sharing and cooperation? If so, what are they?

____

____

____

____

____

____

____

____

____

____

12. What is your library's overall degree of readiness to implement its own automation activities?

1	2	3	4	5	6	7
Low Readiness						High Readiness

13. What is your library's overall degree of readiness to engage in automated networking activities at the regional and/or statewide levels?

1	2	3	4	5	6	7
Low Readiness						High Readiness

SECTION 3

GENERAL AUTOMATION

1. Does your library currently utilize automation in some way? (Circle one.)

Yes..	1
No...	2

2. Did your library utilize automation in the past for some functions which are no longer automated? (Circle one.)

Yes..	1
No...	2

[If "Yes"]Please explain why these functions are no longer automated.

____

____

____

3. Which functions in your library are currently automated, which do you have plans to automate or upgrade, and which are you considering for automation or upgrade in the future? The following definitions apply to the column headings on the next page:

- Planning for automation means that you have actually started planning in a formal way by discussing automation options, determining requirements and specifications, making contacts with vendors, etc.
- Considering automation means that you have been thinking about automation but have not yet started the more formal process of planning.
- Planning or considering an upgrade means that you are currently automated and plan to expand your system; please indicate both the current and potential vendor(s).

[Note: If your library/library system is NOT automated and if automation is NOT presently being considered or planned, please SKIP to Question 5, p. 3-4. Please respond to the remaining questions in Section 3 on the basis of the benefits that automation and networking might provide to your library in the future.]

On the following page, for each of the functions that you have actually automated or are planning to automate/upgrade, please indicate the name of the vendor, automated system or service used or selected. (For example, for the cataloging function you might be using OCLC; for the circulation function you might be using a specific turnkey vendor's system (e.g., CLSI's LIBS100, DataPhase's ALIS I, etc.).

(3. continued) [Check the appropriate column(s)]

Function	Currently Automated	Planning to Automate or Upgrade	Considering Automation or Upgrade	Vendors, Systems or Services
Acquisitions	a1.	a2.	a3.	
Cataloging (current)	b1.	b2.	b3.	
Retrospective Conversion	c1.	c2.	c3.	
Catalog Maintenance	d1.	d2.	d3.	
Public Access Catalog	e1.	e2.	e3.	
Circulation	f1.	f2.	f3.	
Serials Control	g1.	g2.	g3.	
Reference (including access to online databases)	h1.	h2.	h3.	
Interlibrary Loan	i1.	i2.	i3.	
Document Delivery	j1.	j2.	j3.	
Materials Booking/Scheduling	k1.	k2.	k3.	
Administrative Support	l1.	l2.	l3.	
Microcomputers for Public Use	m1.	m2.	m3.	
Other* (please specify)	n1.	n2.	n3.	
	o1.	o2.	o3.	
	p1.	p2.	p3.	
	q1.	q2.	q3.	

*Please indicate any other functions that may be supported by automation (e.g., word ng, electronic mail, spreadsheet, electronic bulletin board).

4. What do you consider to be the major benefits or advantages of the current automation of your library? (Please rate each of the following expected benefits to your library on a scale of 1-5. Circle one number for each item.)

Benefits of Current Library Automation	Least Important 1	2	3	4	Most Important 5
a. Increased productivity	1	2	3	4	5
b. Improved performance/efficiency	1	2	3	4	5
c. Improved effectiveness to patron	1	2	3	4	5
d. Improved record keeping	1	2	3	4	5
e. Building local expertise and experience	1	2	3	4	5
f. Improved management of resources	1	2	3	4	5
g. Improved access to local resources	1	2	3	4	5
h. Ability to search online catalog of your library from a remote location	1	2	3	4	5
i. Ability to search online catalogs of other libraries from a remote location	1	2	3	4	5
j. Improved information services	1	2	3	4	5
k. Other (please specify) ____________	1	2	3	4	5
l. ____________________	1	2	3	4	5
m. ____________________	1	2	3	4	5
n. ____________________	1	2	3	4	5
o. ____________________	1	2	3	4	5

5. What immediate needs does your library have which could be supported through automation of some (or additional) functions within your library:

6. In general, what do you consider to be the major benefits or advantages of an automated network at a regional level, by type of library, and/or at a statewide level? (Please rate the following expected benefits to your library on a scale of 1-5. Circle one number for each item.)

	Least Important				Most Important
Benefits of Automated Networking	1	2	3	4	5
a. Access to holdings data of other libraries	1	2	3	4	5
b. Subject access to materials	1	2	3	4	5
c. Resource sharing	1	2	3	4	5
d. Improved delivery services	1	2	3	4	5
e. Improved efficiency of operations	1	2	3	4	5
f. Improved effectiveness to patrons	1	2	3	4	5
g. Potential to access remote union catalog	1	2	3	4	5
h. Improved information services	1	2	3	4	5
i. Shared expertise and experience	1	2	3	4	5
j. Improved communications (interpersonal and machine-machine) among libraries	1	2	3	4	5
k. Improved management of resources	1	2	3	4	5
l. Other (please specify) ____________________	1	2	3	4	5
m. ______________________________	1	2	3	4	5
n. ______________________________	1	2	3	4	5

7. What immediate needs does your library have which could be supported through an automated system which would link your library to a regional or statewide automated system/network or to a system/network of libraries of a common type?

8. How do you think an automation and networking plan for libraries in the state can support these needs of libraries?

9. What issues relating to the development of in-state automated systems and networks do you think should be addressed in a formal statewide networking plan? (Please rate in terms of importance to your library on a scale of 1-5.) (Circle one number for each issue.)

	Least Important				Most Important
Issues	1	2	3	4	5
a. System security and privacy of files	1	2	3	4	5
b. System vulnerability and backup options	1	2	3	4	5
c. Selection of automation systems	1	2	3	4	5
d. Ownership of automated systems	1	2	3	4	5
e. Location of host* computers	1	2	3	4	5
f. Operation and management of host* computers	1	2	3	4	5
g. Document delivery systems	1	2	3	4	5
h. Materials booking and scheduling	1	2	3	4	5
i. Performance requirements	1	2	3	4	5
j. Performance monitoring and evaluation	1	2	3	4	5
k. Education and training of staff	1	2	3	4	5
l. Education and training of patrons	1	2	3	4	5
m. Other (please specify) ________________	1	2	3	4	5
n. ________________________	1	2	3	4	5

*host computer = a computer which stores the data from more than one library and supports operational access, via computer terminals, to that data by the staff (and patrons) of the respective libraries.

10. What concerns do you have regarding automation? [Please rate on a scale of 1-5 in terms of significance to you at present (whether pre-automation, during implementation of automation, or during continuing operation of automated systems). Circle one number for each item.]

Concerns	Least Important 1	2	3	4	Most Important 5
a. Increased workload	1	2	3	4	5
b. Reduction in staff	1	2	3	4	5
c. Lack of technical expertise	1	2	3	4	5
d. Communications costs	1	2	3	4	5
e. Start-up costs	1	2	3	4	5
f. Continuation costs	1	2	3	4	5
g. Reliability (system vulnerability and backup options)	1	2	3	4	5
h. Data/record security from unauthorized modification/deletion	1	2	3	4	5
i. Data/record privacy	1	2	3	4	5
j. Compatibility with other systems	1	2	3	4	5
k. Choice of most appropriate system to best meet your library's needs	1	2	3	4	5
l. Obsolescence	1	2	3	4	5
m. Training for staff and patrons	1	2	3	4	5
n. Other (please specify) ________________	1	2	3	4	5

11. What role would you prefer that your library play in a statewide resource sharing and automation plan? (Please rate in terms of preference to you on a scale of 1-5.) (Circle one number for each item.)

Role in Statewide Plan	Least Important 1	2	3	4	Most Important 5
a. As an owner of an in-house automated system	1	2	3	4	5
b. As a user of another library's system	1	2	3	4	5
c. As co-owner of a system	1	2	3	4	5
d. As a user of a consortium system	1	2	3	4	5
e. As a user of a statewide system	1	2	3	4	5
f. As a host for other libraries	1	2	3	4	5
g. No role at all in a statewide plan	1	2	3	4	5
h. Other (please specify) ______________	1	2	3	4	5
i. ______________________________	1	2	3	4	5
j. ______________________________	1	2	3	4	5

12. What do you think are the conditions that will encourage the development of automated library systems and networks in the state? (Circle one or more numbers.)

Availablity of local funds..................	1
Funding and support at the state level......	2
State of automation in in-state libraries....	3
Exposure of the general public to automation	4
Other (please specify) ____________________ ____ ____	5

13. Does your library or funding agency have any policies that may discourage your participation in automation activities?

Yes..	1
No...	2
Uncertain..................................	3

[If "Yes"] Please specify details or attach copies of relevant policies to your response.

13a. Automation activities at the individual library level which would be impossible under current policies:

____

____

____

____

____

____

13b. Automation activities at the regional or state level or by common type of library which would be impossible under current policies:

____

____

____

____

____

____

14. Are there any other factors that may discourage your participation in automation activities, such as financial or other constraints, or governance problems, etc.?

Yes..	1
No...	2

[If "Yes"] Please specify details.

____

____

____

____

____

____

____

____

____

____

____

SECTION 4
DETAILS OF AUTOMATED SYSTEMS

Note: This section should be completed only by libraries which have some form of automation (for example, access to OCLC, online database searching, retrospective conversion projects, microcomputers for staff and/or patron use).

If your library/library system is NOT automated, you have reached the end of this questionnaire. Thank you for participating in this survey for the Virginia State Library.

1. On the following pages, please list all the computer and related hardware that your library currently utilizes to support library operations and patron uses. Please include the manufacturer's name (or vendor's name), model number, quantity that you have, and purposes of use.

   Also, please indicate if the library owns or leases the equipment and where it is located.

1. (Continued)

						Location				
Type of hardware	Manufacturer's name	Model No.	Quantity	Purposes of use*	Owned or Leased by Library (Specify "O" or "L")	In a Computer Room of the Library	Elsewhere in the Library	In a Computer Room of Parent Organization	In an External Data Center (not part of parent organization)	Other (Please Specify)
a. Computers/Word Processors										
b. Terminals										
- computer										
- word processing										
- facsimile										

---

*(i.e., acquisitions, cataloging, ILL, administration, etc.)

Type of hardware	Manufacturer's name	Model No.	Quantity	Purposes of use*	Owned or Leased by Library (Specify "O" or "L")	Location				
						In a Computer Room of the Library	Elsewhere in the Library	In a Computer Room of Parent Organization	In an External Data Center (not part of parent organization)	Other (Please Specify)
c. Modems										
- 300 baud										
- 1200 baud										
- 9600 baud										
- switchable baud rate										
- other										
d. Printers (indicate speed)										
e. Public Use Micros										
f. Other (please specify)										
__________										
__________										
__________										
__________										

*(i.e., acquisitions, cataloging, ILL, administration, etc.)

2. Please list the storage devices used to store the library's machine-readable data (bibliographic records, patron records, circulation records, etc.)

Type of storage device	Manufacturer's name	Model No.	Current Storage Capacity of System*
a. Disk drives			
- hard disks (removable)			
- hard disks (non-removable)			
- floppy disks			
- laser compact disks			
- optical disks			
- digital			
- video			
b. Tape drives			
- cassette tapes			
- magnetic tape reels			
c. Other (please specify)			
______________________			
______________________			
______________________			

---

* Total capacity (whether used or not used) of storage devices used with the system as it is currently configured (i.e., 2 x 80 MByte disks).

3. Please identify the forms of data communications capability that your library currently has to the computer(s) suporting its functions? [Circle number(s) which apply and indicate to which specific computer(s) each type of connection is made. Please include OCLC.]

	Specify for each system used:				
Type of Connection	System 1	System 2	System 3	System 4	System 5
Hardwire connection to computer....... 1					
Dial-up telephone connection.......... 2					
Dedicated telephone connection........ 3					
Microwave connection.................. 4					
Other (please specify) ____________					
____________					
____________					
____________.... 5					

C 4-5

4. What computer software does your library use on the mainframe, mini and/or micro(s) to support the functional operations of the library? Please indicate the specific names of software that you use and specify the computer system on which each is used.

	Specify for each system used:				
Computer Software	System 1	System 2	System 3	System 4	System 5
a. Library support software (packaged)					
b. Library support software (in-house development)					
c. Application programming languages					
d. General packaged software					

5. How many machine-readable bibliographic records do you currently have in full MARC format and/or in other bibliographic formats (i.e., converted, acquired or created)?

Type of material	No. of title records in full MARC format	Number of title records in other formats
Books/Monographs	a1.	a2.
Serials (periodicals, newspapers, etc.)	b1.	b2.
Audiovisuals	▨	▨
Records/audiocassettes/etc.	c1.	c2.
Films/slides/kits/etc.	d1.	d2.
Government documents	e1.	e2.
Technical reports	f1.	f2.
Microforms (both monograph and serial)	g1.	g2.
Computer software	h1.	h2.
Other (please specify)	i1.	i2.
	j1.	j2.
	k1.	k2.
	l1.	l2.
	m1.	m2.

6. Who is/was your source for retrospective conversion of bibliographic records?

____

7. How many patron registration records do you currently have in machine-readable form?

patron records: __________

8. Does the automated system in your library communicate with other automated sytems?

Yes.. 1
No... 2

[If Yes] With which specific systems does your library's automated system communicate?

____
____
____
____

9. In general, how satisfied have you been with the performance of all the various automated systems in your library?

1	2	3	4	5
Very Unsatisfied	Unsatisfied	Neutral	Satisfied	Very Satisfied

10. How satisfied have you been with the ability of the specific automated systems used in your library to support the following functions?(Circle the appropriate number in each.)

	Very Unsatisfied	Unsatisfied	Neutral	Satisfied	Very Satisfied
a. Acquisitions	1	2	3	4	5
b. Cataloging	1	2	3	4	5
c. Public Access Catalog	1	2	3	4	5
d. Circulation	1	2	3	4	5
e. Serials Control	1	2	3	4	5
f. Reference	1	2	3	4	5
g. Interlibrary Loan	1	2	3	4	5
h. Document Delivery	1	2	3	4	5
i. Materials Booking/ Scheduling	1	2	3	4	5
j. Administrative Support	1	2	3	4	5
Other (please specify)					
k.___________	1	2	3	4	5
l.___________	1	2	3	4	5

11. What security restrictions are imposed on access to your library's computer system and to files within your system? Please specify which systems or files are restricted and how they are restricted.

12. Would it be feasible for you to act as host* to other libraries' databases on your automated system? [Circle the appropriate response.]

Yes..	1
No..	2
Maybe..	3

Explain any constraints which may be placed on you (e.g., possible political constraints).

13. Are there any libraries in particular with whom you would be willing to share your system ? Please specify which libraries and why.

---

*host (see definition on p. 3-7)

14. What problems do you think you might encounter if your library were the host for other libraries' databases? [Circle the appropriate number(s).]

Response time degradation........................	1
Insufficient terminal communications capacity....	2
Prioritization of workloads......................	3
Security and privacy of files....................	4
Ownership of data................................	5
Responsibility to meet performance criteria......	6
Cost allocation..................................	7
Other (please specify) ______________________ ____ ____...	8

15. What is your library's current state of readiness (in terms of staff preparation and attitudes, and availability of equipment) to support other libraries' databases on your system? [Circle the appropriate number.]

1 2 3 4 5 6 7

Low Readiness High Readiness

Thank you for participating in this survey for the Virginia State Library.

STUDY TO DEVELOP A LONG-RANGE LIBRARY AUTOMATION AND NETWORK DEVELOPMENT PLAN FOR THE COMMONWEALTH OF VIRGINIA

PHASE II REPORT

STUDY TO DEVELOP A LONG-RANGE LIBRARY AUTOAMTION AND NETWORK DEVELOPMENT PLAN FOR THE COMMONWEALTH OF VIRGINIA

PHASE II REPORT

December 31, 1985

Prepared By:

Jose-Marie Griffiths, Ph.D.
Paula Meise Strain

King Research, Inc.
6000 Executive Boulevard
Suite 200
Rockville, Maryland 20852

(301) 881-6766

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY i

SECTION 1 INTRODUCTION 1

SECTION 2 NETWORKING ALTERNATIVES 4

2.1 Legal Structure of a Virginia Library Network 8

- 2.1.1 A Virginia Library Network Organization as a New Division of the State Library under the Jurisdiction of the State Library Board with Input from the State Networking Users Advisory Board (SNUAB) 10
- 2.1.2 A Virginia Library Network as a New Not-for-Profit Organization 11
- 2.1.3 A Virginia Library Network Organization as a Special Program of a For-Profit Commercial Service Organization, Such as TCC or SOLINET 13
- 2.1.4 Recommended Network Organization and Governance Structure 14

2.2 The Membership or Constituency of a Virginia Library Network 18

2.3 Governance of a Virginia Library Network 18

2.4 Technological Architecture of a Virginia Library Network 21

- 2.4.1 Communications 25
  - 2.4.1.1 ALANET 26
  - 2.4.1.2 VNET 27
  - 2.4.1.3 VINe 27
  - 2.4.1.4 Other Commercial Networks 29
- 2.4.2 Development of the Virginia Database 29
  - 2.4.2.1 Use of TCC 30
  - 2.4.2.2 Use of SOLINET 31
  - 2.4.2.3 Use of a Commercial Vendor 32
  - 2.4.2.4 Use of the Automated VTLS System of One or More Virginia Libraries in Expanded Form 33
  - 2.4.2.5 Recommendations for the Development of the Virginia Database 35
- 2.4.3 Serials Holdings Data 35
- 2.4.4 Interlibrary Loan 36
- 2.4.5 Document Delivery 39
- 2.4.6 Cooperative Collection Development 41
- 2.4.7 Preservation and Conservation of Library Materials 41
- 2.4.8 Document Repository 42
- 2.4.9 Consultation and Advisory Services 43
- 2.4.10 Education and Training 43
- 2.4.11 Interfacing Local/Regional Automated Systems 44

TABLE OF CONTENTS (Continued)

Page

SECTION 2 NETWORKING ALTERNATIVES (continued)

2.5 Summary of Recommended Service Offerings 45

2.6 Costs of Specific Systems and Service Options 47

2.6.1 Use of ALANET, VNET, or other electronic mail network 49
2.6.2 Use of TCC, SOLINET or Auto-Graphics for Supporting the Virginia Database 50
2.6.3 Use of a Commercially Available Automated System to Support a Shared Regional Database and Other Services 52
2.6.4 Analysis of Distribution of CAVALIR on Microfiche Versus Laser Disk 57

2.7 Recommended Systems and Services 60

2.8 Recommended Levels of Membership Participation in a Statewide Network 60

2.9 "Hosting" Other Libraries' Databases 64

SECTION 3 RECOMMENDATIONS 68

SECTION 4 LIBRARY AUTOMATION AND NETWORK DEVELOPMENT PLAN FOR THE COMMONWEALTH OF VIRGINIA 79

4.1 Statement of Purpose 79

4.2 Legal Structure and Governance of the Network 80

4.3 Membership and Levels of Participation 80

4.4 Network Services 81

4.5 Implementation Activities 83

4.5.1 Activities to be Conducted at the State or Network Level 83
4.5.2 Activities to be Conducted at the Regional level 86
4.5.3 Activities to be Conducted at the Local level 87
4.5.4 Schedule for Implementation 88

4.6 Projected Costs 97

REFERENCES 102

BIBLIOGRAPHY 103

APPENDIX A COST ANALYSIS

APPENDIX B OPTIONS FOR NETWORKING COMPONENTS

LIST OF FIGURES

		Page
Figure 1	Legal Structure of a Virginia Library Network	16
Figure 2	The Virginia Library Network	24
Figure 3	Comparison of Costs for CAVALIR Production on Fiche and CD-ROM	59

LIST OF TABLES

		Page
TABLE 1	Alternative Network Organization and Governance Structures	9
TABLE 2	Cost of Purchasing vs. Borrowing and Lending	38
TABLE 3	Summary of Annual Costs to Maintain/Expand the Virginia Database by Different Vendors	51
TABLE 4	Summary of Start-Up and Annual Maintenance/Operational Costs to Maintain Regional Databases, ILL and Circulation, on an Integrated, automated Library System	53
TABLE 5	Average Costs to Participate in a Shared Regional System Supporting a Shared Database, Interlibrary Loan, and Circulation Control	54
TABLE 6	Summary of Costs to Upgrade Regional Automation Systems to Support Online Public Access Catalogs	55
TABLE 7	Average Costs to Upgrade Shared Regional System to Support Online Public Access Catalogs	56
TABLE 8	Network Costs	98

EXECUTIVE SUMMARY

This study of library automation and networking in Virginia has been conducted in two phases. The outcome of Phase I of a Study to Develop a Long-Range Library Automation and Network Development Plan for the Commonwealth of Virginia was the determination that a more formal library networking configuration is required in the state. Phase II of the project focused on the development of alternative strategies for the evaluation of the more formal configuration, and development of a phased implementation plan for library networking in Virginia.

Different ways in which library networking in Virginia could be formalized have been identified. Each of the formalizing mechanisms requires considerable investment in planning, design, and implementation which are detailed in this Phase II plan. Other details developed include:

- network structure
- network governance and network costs
- options for specific systems and services to be adopted
- the functions that the network will support
- the sequencing and selecting of recommended implementation activities over a 15-year period
- the roles and responsibilities for network development.

Finally, the costs of network development, operation and participation are described to enable individual library managers and funding bodies to decide whether or not to participate in the Virginia library network, and at what level. All libraries in the Commonwealth will be eligible to participate in automation and networking activities on a statewide basis, regardless of their type, size, geographic location, or level of automation.

SECTION 1
INTRODUCTION

This study of library automation and networking in Virginia has been conducted in two phases. The outcome of Phase I of a Study to Develop a Long-Range Library Automation and Network Development Plan for the Commonwealth of Virginia was the determination that a more formal library networking configuration is required. Phase II of the project focused on the development of alternative strategies for the evaluation of the more formal configuration, and development of a phased implementation plan for library networking in Virginia.

Important factors entering into the determination that a more formal library networking configuration is required in Virginia are:

- the almost overwhelming need and desire to move to a more formal configuration on the part of librarians in Virginia as determined through the Survey of Virginia Libraries, the regional hearings and interviews conducted during Phase I of this study;

- the fact that a considerable amount of networking is already performed in Virginia, although largely on an informal basis;

- the substantial investment that has already been made by Virginia libraries and funding agencies in automation and networking, the return on which will only be fully achieved by maximizing the use of machine-readable files and automated systems.

- the current status of library automation in general and the perceived need of librarians in Virginia to take advantage of some of the newer technologies that are emerging, e.g., compact laser disks;

- the fact that formalizing library networking can help to ensure better levels of performance and effectiveness to patrons;

- the current planning for a unified digital telecommunications system to extend throughout the state, and the early consideration of libraries as potential heavy-duty users of such a network.

Interlibrary resource sharing, one of the primary objectives of library networking, requires the development of locator tools to facilitate the process of identifying which libraries hold needed materials. The Virginia State Library has been actively engaged in the development of a Virginia database of library holdings. The database currently contains over 2.0 million unique titles held by 95 libraries and is distributed as CAVALIR (a COM catalog) to 271 libraries throughout the Commonwealth. The Virginia database, while an important component of the infrastructure needed to support a Virginia library network, is by no means complete. It currently covers only about 12 percent of the Virginia libraries' unique title holdings.

Over the last decade many libraries in Virginia initiated automation and retrospective conversion projects in response to their own needs and their vision of the future of libraries. To date, over $4 million have been invested in retrospective conversion projects which led to the creation and distribution of this database, of which over $1 million were Commonwealth funds. The Virginia database is the only self-contained statewide library database that is being used for current cataloging support and retrospective conversion, as well as for interlibrary loan. Thus, the database is among the most advanced library resource sharing programs in the U.S.

However, the return on the investment of over $4 million will not be fully optimized until the automated libraries make full use of their machine-readable records and all libraries share the machine-readable database to share library resources and/or to support their own automation efforts. Each library should, ultimately, be able to search its own holdings database and those of other libraries in a variety of ways, and should be able to retrieve current availablity information. These capabilities are not yet realized even by all libraries participating in the development of the Virginia database, nor by other libraries in the

Commonwealth. It is the purpose of this phase of the project to develop a long-range plan that will enable all libraries in the Commonwealth to participate in automation and networking activities on a statewide basis.

A number of different ways in which library networking in Virginia could be formalized have been identified. Each of these formalizing mechanisms require considerable investment in planning, design and implementation which are detailed in this Phase II plan. Other details developed include:

- network structure,
- network governance and network costs,
- options for specific systems and services to be adopted,
- the functions that the network will support,
- the sequencing and selecting of implementation activities,
- the roles and responsibilities for network development.

Finally, the costs and benefits of network development, operation and participation are described to enable individual library managers and funding bodies to decide whether or not to participate in the Virginia library network, and at what level.

SECTION 2
NETWORKING ALTERNATIVES

In Phase I of this study a number of different ways in which library networking in Virginia could be formalized were identified as follows:

- develop legislation
- establish a network organization
- develop membership criteria
- design procedures and protocols for interaction
- develop equalization/compensation schemes
- adopt standards of performance
- adopt/expand automation.

Each of the mechanisms listed above require a considerable investment in planning, design and implementation. However, the possible alternatives are dependent upon the exact nature of any proposed library network in terms of its structure, functions performed and services offered. Once the desired network has been defined, alternatives for achieving it can be evaluated.

The main problem in developing library networks has been based on the political and jurisdictional diversity of extant networks in all their multiple forms and facets, and in the tension created by an attempt to forge unity and centrality out of multiplicity and decentralization.

This tension has created a fear of possible loss of local autonomy, a reluctance to take part in reciprocal arrangements, and questions regarding mutual benefits and reciprocal burdens.

The most immediate factor in the minds of many library funding authorities when considering the sharing of library resources in a network form is the potential financial savings, rather than the sharing of resources for other purposes. Such governing institutions often are reluctant to provide funds at the start of such ventures when return on investment and financial savings seem far removed. However, a library network of any appreciable size which generates a one percent savings per year for its library members would generate enough money to pay for itself; greater savings could be passed on as real savings to member libraries.

The important point here is that a network should be efficiently structured so as to benefit its members enough to make it worth their membership. To do so within current political and jurisdictional contexts, it is essential for the network to foster and coordinate cooperative channeling of current and new resources to its members in order to assure their maximum use of these resources.

Two basic approaches to the development of statewide networking activities have evolved. On the one hand some states decided that networking activities should be programmed under an existing organization rather than creating a new organization. In this approach the focus of network development is in cooperation rather than competition, with a flexible and practical approach to mesh existing organizations and networks. The other approach is in the development of a new, self-contained organization which may or may not duplicate existing services and network functions.

Three basic aspects of library networks are the foundation on which networks can be developed. They are:

- the legal structure of the network organization,
- the membership or constituency of the network organization, and
- the governance of the network organization.

The legal structure of a network organization is the formal, organic ordering of its activities relative to the law from which it derives its existence and authority to act. The membership or constituency of the network provides the market, financial support, the needs for service, and the interests to which the network is accountable. The governance of the organization is the structure and administration of the power relationships among the various organizational shareholders (i.e., the members or constituents) within the network. Note that this is distinct from the management of the network, which is the operational process by which resources are obtained and used to accomplish organizational objectives set by the governance group.

These three factors will define and limit the scope of the network activity and the success in conducting that activity. Carlile[1] outlines the list of characteristics and qualities that library networks should have reflected in their legal structures, memberships and constituencies, and governance as follows:

- Balanced representation of diverse constituency in the governance, either directly or indirectly.

- Communication from the constituency to governance, and accountability from governance to constituency, regarding the needs and resources of the constituency and the network.

- Flexibility to assure participation in or with various other governmental or private entities and programs, both today and as they change over time.

- Eligibility for funding both on a general cooperative project basis and on a specific institutional basis.

- Authority and power to execute the purposes of the network.

- Authority and power to enforce membership in accordance with the purposes of the network.

- Ability to foster interdependent interaction and mutual trust.

- Ability to coordinate cooperative planning of shared resources, both those in existence and those to be developed in the future, by contract with third parties, cooperation among members, and by internal development.

- Ability to balance centrality of control and direction with the diverse needs of the constituency, avoiding overbroad distribution of power while rendering the governance responsive to the constituency.

- Provision of status, prestige and support for the standards and programs of the network.

- Ease of implementation and operation of network services.

- Continuity of internal control and direction of network operations and services.

- Assurance of financial stability for network operations and network participation.

- Provision of an interface with the private sector, and federal and state governments.

- Ability to generate correct and intelligent decisions quickly and under pressure.

- Ability to avoid political obstacles to performance.

- Ability to make realistic evaluations of the purposes, intents, and abilities of both its constituency and third parties.

- Ability to communicate with and direct management of network operations.

- Self-criticism and evaluation regarding performance and its furtherance of the public purpose of the network.

- Ability to act on behalf of the membership.

- Ability to set procedures and guidelines for action by constituents and by network management.

- Ability to act as a vehicle for capitalization of network funding.

- Ability to provide a united face on behalf of the network to third parties who deal with the network legally, fiscally, contractually, and politically.

2.1 Legal Structure of a Virginia Library Network

Professional literature on networking often links discussion of the legal structure of network organizations with discussion of governance of the network organization, since the two issues are closely related. However, the term "governance" often is used when authors actually are referring to the legal structure of the network organizaton, so careful interpretation of the text is required.

Stevens[2] divides the legal structure of library network organizations into three categories:

- governmental body,
- quasi-governmental body, and
- membership organization with a legal charter and by-laws.

To these categories, Montgomery and Dowlin[3] add:

- for-profit organization,
- not-for-profit organization, and
- network supplier organization.

The main differences among these various legal structures for network organization involve the organizational environments and their relationships with member libraries as expressed through governance, and in the incentives for cooperation. Montgomery and Dowlin[3] summarized these governance/incentive differences which we have modified and presented in Table 1.

TABLE 1

ALTERNATIVE NETWORK ORGANIZATION AND GOVERNANCE STRUCTURES

Type of Organization	Governance	Incentive
Government	Government Agency	Political/Service
Quasi-government	Government	Political/Service
Membership	Membership	Service
For-profit	Organization	Service/Profit
Not-for-profit	Organization	Service
Network suppliers	Suppliers	Service/Profit

In reviewing examples of each of the above network organization structures, there appears to be no consensus as to which structures are likely to prove more successful then others within various contexts. Carlile[1] concludes:

> "The ultimate conclusion is that no single solution exists. If a substantial number of academic, nonacademic, public and private libraries or library institutions are interested in establishing, improving, or otherwise modifying a network, this in itself will provide the necessary prestige. Appropriate public purpose and general political clout will allow the participants, with advice perhaps from consultants, to formulate just about any kind of structure and governance desired."

In considering the possibilities of incorporating variations of these network organization structures in Virginia, we reviewed the following possibilities:

- Establishing a Virginia library network organization as a new division of the State Library under the jurisdiction of the State Library Board, with input from the State Networking Users Advisory Board (SNUAB);

- Establishing an independent Virginia library network as a new not-for-profit organization;

- Establishing a Virginia library network organization as a special program of a for-profit commercial service organization, such as The Computer Company (TCC) or the Southeastern Library Network (SOLINET).

The advantages and disadvantages of each of these possible network organization structures are outlined below.

2.1.1 A Virginia Library Network Organization as a New Division of the State Library under the Jurisdiction of the State Library Board with Input from the State Networking Users Advisory Board (SNUAB)

Advantages are:

- Legislation[4] already exists empowering the State Library Board to promote and financially support the networking of all types of libraries in the Commonwealth.

- This legislation also created the SNUAC (now SNUAB) which is composed of representatives from all types of libraries (academic, public, school, and special).

- A considerable knowledge base regarding libraries in Virginia is already in place within the State Library.

- The State Library has been especially active in supporting activities which will lead to the development of a statewide library network, in particular, the development of the Virginia database.

- The existing legislation allows the State Library Board to obtain network services from contractors, so that staff of the network organization would not be required to directly provide all network services.

Disadvantages are:

- Some Virginia librarians are concerned that any network under the jurisdiction of the State Library Board may be too strongly influenced by the State Librarian and staff of the State Library and, therefore, would not be adequately responsive to the needs of all types of libraries in the Commonwealth.

- The establishment of a Virginia library network organization within the State Library would require that additional funding and staffing be allocated by the Legislature to support these new activities for coordination of multitype library networking statewide.

- The network organization would be subject to legislative cutbacks in funding and staffing.

- Clear delineation of responsibilities would be required to ensure that the SNUAB would determine the overall administrative policies for the network organization, while the State Librarian and the director of the network organization would be responsible for the general administration and operation of the network organization.

- If the network organization is a public organization, the library community may expect free networking services.

2.1.2 A Virginia Library Network as a New Not-for-Profit Organization

Advantages are:

- An independent organization would administer the network, and therefore no one type of library could potentially have more influence on network development than any other type.

- The network organization would not be subject to legislative cutbacks in funding and staffing.

- The operating goal of the organization would be service and a profit motive would not be involved which potentially could increase prices for network services.

- The organization could formally contract with the Commonwealth for operation of the network organization and provision of network services. They also could sub-contract network services.

- A precedent has been set with the establishment of the Center for Innovative Technology (CIT) as a non-profit corporation created by the Commonwealth under the authority of the Innovative Technology Act of 1984.

Disadvantages are:

- Seed money would be required for start-up and the network would need to be self-supporting.

- This type of organization would not be part of the government structure of the Commonwealth and, therefore, would not be in keeping with the legislative intent of House Bill 430 which implies that administration of library networking is a governmental function and is the responsibility of the State Library Board, whose operational body is the State Library.

- Such a non-governmental organization would not have free access on an on-going basis to the expertise of the State Library, the Council of Higher Education, the Virginia Department of Education's Supervisors of School Libraries, and the Department of Information Technology.

2.1.3 A Virginia Library Network Organization as a Special Program of a For-Profit Commercial Service Organization, Such as TCC or SOLINET

Advantages are:

- The network organization could utilize existing networking equipment, services, staff support and expertise.
- Cost savings may be realized through shared use of these existing administrative operations and their related service operations.
- Competitive bidding for administration of the network organization would keep costs for network administration and services within reasonable limits.
- The commercial service organization could formally contract with the Commonwealth for operation of the network organization and provision of network services.
- Unsatisfactory performance by the network organization contractor could result in termination of the contract and re-solicitation.

Disadvantages are the same as those listed in Section 2.1.2 and also include several additional major disadvantages:

- Contracting out the administration of the network organization would require some staffing in the sponsoring agency/organization for selection and monitoring of the network organization contractor.
- Careful RFP preparation and contract monitoring would be required to ensure that the network organization met functional and performance requirements.

- The requirement for periodic re-solicitation of the contract for operation of the network organization may result in change of contractor and the related need for allowing time and effort for the new contractor to implement all required functions.

- Once a contractor had acquired experience with the Virginia network, it would be very difficult for another vendor to take over the network. The Commonwealth could expect single, high bids for subsequent contracts and face a monopoly of expertise.

- Costs for operation of the network organization by a for-profit organization may be higher than other alternatives, because of the need for profit making.

- Operation of the Virginia library network organization as a special program of another organization would result in the needs and priorities of the network being, at a minimum, secondary to the needs of the parent organization and those of larger clients.

2.1.4 Recommended Network Organization and Governance Structure

In Virginia, legislation already exists to promote and support the cooperation and networking of all public, academic, special and school libraries throughout the Commonwealth as the responsibility of the State Library Board. The Board has the ability to allocate funds to assist libraries in preparing for networking and in supporting a library network. The State Library administers the funding allocations approved by the State Library Board and assists libraries throughout the Commonwealth in applying for these and other funds. A State Networking Users Advisory Board (SNUAB) was created to "advise the State Librarian and the Board in the development and direction of the network and its policies, standards, funding levels and requirements for use, after receiving the input of other libraries."

In reviewing the development of statewide library networks in other states (see Phase I report, Section 6 and Appendix A), most are divisions or projects of their respective state library agencies. Networking activities have evolved in these agencies from involving public libraries only, to multitype activities. In those instances where the network is one or more independent non-profit organizations (for example, Connecticut's Cooperating Library Service Units, CLSUs), funding is still provided by the state. Furthermore, the CLSUs are governed by a Board which reports to the State Library Board and the Joint Standing Committee on Education of the General Assembly. Thus, even when "independent" network organizations are established they remain intimately related to their state library agencies.

In Virginia, the State Library Board already has responsibility for the networking of all types of libraries statewide. The legislative authority already exists. The Virginia State Library, the operational body of the State Library Board, has also been instrumental in allocating funds for retrospective conversion projects, which led to its development of the Virginia database and CAVALIR.

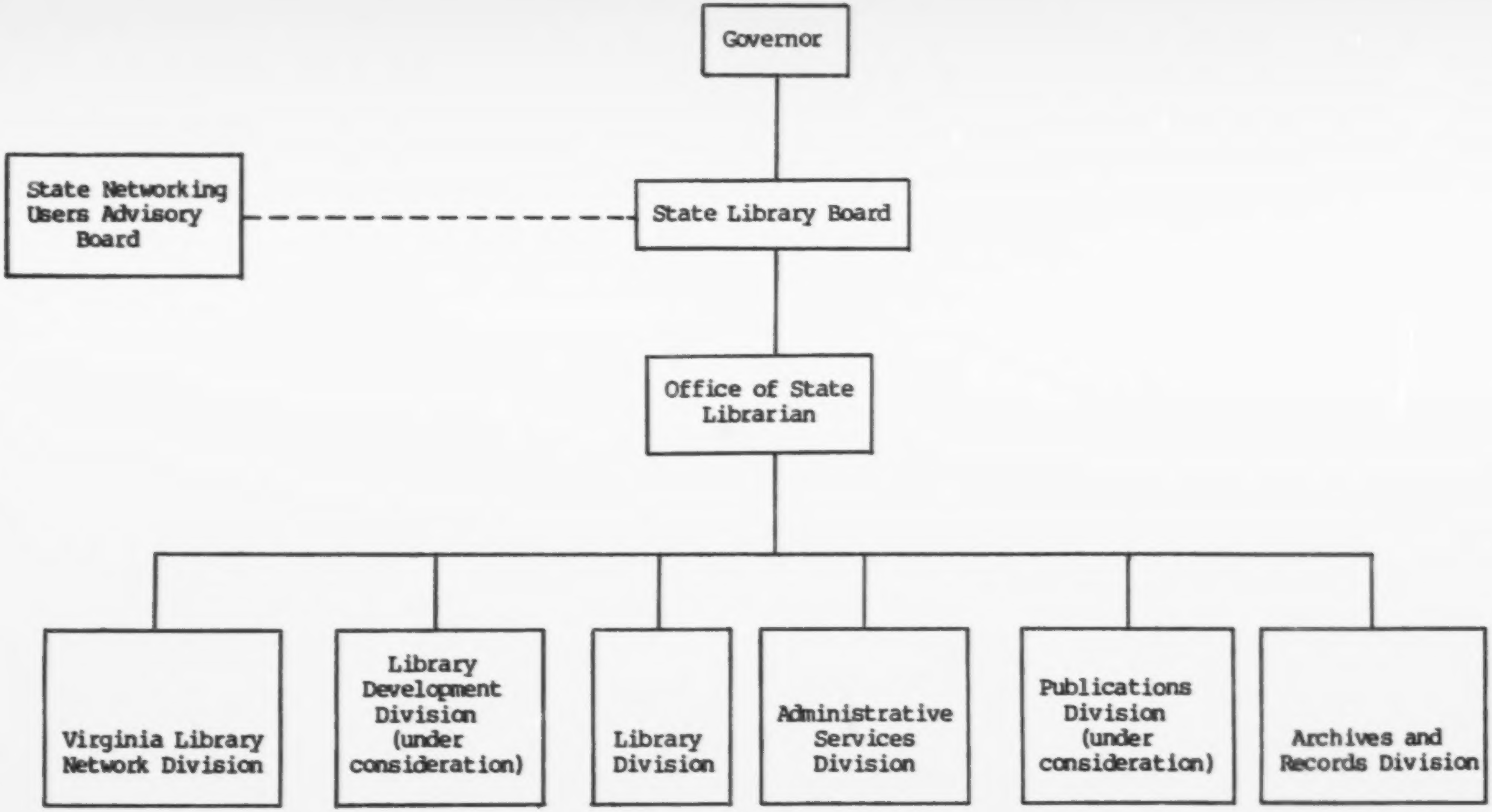
Since the legislation for statewide library networking activities already exists, a Virginia library network should be established within this legal structure. Thus, we recommend that a Virginia library network should fall under the legal jurisdiction of the State Library Board and the SNUAB (although with some modifications as presented in Section 2.3, Governance of a Virginia library network). The recommended legal structure is depicted in Figure 1.

This recommendation that the Virginia library network be established as a new division of the Virginia State Library (VSL) is made with two specific requirements. First, the new division should be established with new funds and new positions. This is important for a number of reasons.

- No confusion should exist over responsibilities of VSL towards public libraries versus responsibilities of VSL towards all

FIGURE 1

LEGAL STRUCTURE OF A VIRGINIA LIBRARY NETWORK


Governor
State Networking Users Advisory Board
State Library Board
Office of State Librarian
Virginia Library Network Division
Library Development Division (under consideration)
Library Division
Administrative Services Division
Publications Division (under consideration)
Archives and Records Division

types of libraries vis a vis automation and networking. The Library Development staff supports the particular needs of public libraries.

- No additional burden should be placed on already strained resources which would mean that efforts would be diluted and the networking activities could fail.

- A statewide, coordinated approach to network development is required which is different in perspective and scope of responsibility from current activities which focus on development assistance to individual libraries or groups of libraries.

- The director and professional staff of the proposed Network Division should have previous experience in working in a statewide, or multi-state, multitype library network environment.

The second requirement is that after the network is fully established and operational, it should become totally self-supporting. If it is not able to support its continued development and operation through service charges, which should be competitive with charges for similar services provided through other organizations, then its existence should be seriously reevaluated. If the network is able to support itself, then the feasibility of spinning it off as an independent not-for-profit organization should be examined.

Thus, we view the development of a Virginia library network providing services for all types of libraries in Virginia as an evolutionary process. To establish itself as a viable organization, the network will require some up-front "seed" money, with revenues generated from provision of services above and beyond basic levels of service.

2.2 The Membership or Constituency of a Virginia Library Network

All libraries in the Commonwealth should be eligible for membership in the network regardless of type, size, geographic location, or level of participation in network activities. Membership in the statewide network will not preclude membership in other library networks at the national, regional or local levels.

All libraries in the Commonwealth will be eligible for all levels of participation in the network. A basic level of membership will be offered for a nominal annual fee to cover basic costs of mailings, etc. Above the basic membership level, a number of service offerings will be made available and libraries will be able to choose the extent of their participation by selecting specific combinations of services. Recommended levels of service and membership are outlined later in this section.

A statewide library network involving all libraries in Virginia will take time to evolve. The network should build upon existing resource sharing networks within Virginia in order that a maximum return on initial investments can be accrued. However, it is crucial that network development plans not incorporate existing activities which would threaten the integrity of a statewide network and eliminate desirable options. For example, it is absolutely essential that machine-readable bibliographic databases be in standard MARC format for inclusion in the evolving network. Non-MARC records should be reviewed in terms of their potential for upgrading (for example, by matching an ISBN, LC number or OCLC number) and ultimate incorporation into the network.

2.3 Governance of a Virginia Library Network

Once the legal structure of a library network is established, the forms of governance that are possible are somewhat constrained. The governance of the network that is established as a division of the Virginia State Library clearly would have to fall within the governance structure of the State Library. Thus, the network would be governed by the State Library Board with input from the SNUAB and the State Librarian.

In order that libraries of all types, sizes and locations in Virginia have adequate representation in the development of networking activities statewide, we recommended that the SNUAB be expanded to include the following members:

- Two public librarians (one representing large public libraries and one representing small public libraries);
- Two academic librarians (one representing public academic institutions and one representing private academic institutions;
- One community college librarian;
- Two school librarians (one representing public schools and one representing private schools);
- Two special librarians (one representing publicly-funded special libraries and one representing privately-funded special libraries).
- One institutional librarian or the institutional consultant at VSL.

At the present time, SNUAB members are appointed by the governor for an indefinite term, with all appointments made simultaneously. We strongly recommend that the legislation be modified in three areas:

- that the SNUAB be expanded to the recommended membership (above)
- that members of the SNUAB members be appointed from a list of candidates nominated by the relevant library professional associations in Virginia (VLA, VSLA, VEMA, etc.)
- that the members be appointed for a three year term with one third of the Board rotating off each year.

These three changes to the legislation should help to ensure appropriate and adequate representation of the interests of all libraries in Virginia, and continuity of input to the development of library networking activities statewide.

If the network organization ultimately becomes an independent not-for-profit organization, alternative formats of governance become feasible. Two basic forms of governance are possible:

- governance by a Board of Directors
- governance by the membership.

Governance by a Board of Directors would provide for a working group of reasonable size to provide advice and direction to the network organization. This group could be structured to equally represent the interests of the different types of libraries participating in the Virginia network. Certain policy issues could be referred to the entire membership for vote, if required.

Governance by the entire membership of the network would indeed be representative of the needs of the network participants, but the size of the group would be unworkable for general decision-making and problem resolution. Also, governance by membership could bias network service offerings towards the interests and priorities of one or more specific types of libraries which may represent a large proportion of the membership. The interests of less numerous types of member libraries would be subordinated.

Thus, we recommend that if the network organization moves outside the State Library structure, it should be governed by a Board of Directors with the same makeup as the recommended, expanded SNUAB. With this independent network structure, the members of the Board of Directors should be elected by the membership of the respective library professional associations in Virginia.

2.4 Technological Architecture of a Virginia Library Network

It is important to stress that networking implies much more than activities conducted via a computer and telecommunications network. The interpretation adopted throughout this study has been any activity in which multiple libraries cooperate. Thus, our use of the term "Virginia library network" refers to a network organization rather than a physical set of nodes and linkages.

Nevertheless, one of the important components of a Virginia library network is the Virginia database (machine-readable). Thus, we see that statewide library networking in Virginia will continue to take advantage of technological developments as they become available for a cost appropriate to the benefits they offer. It is recommended that library networking activities in Virginia make use of available and appropriate levels of technology without excluding any library from participating in network services. This means that a network service may be provided in different forms to members participating at different levels. These forms and levels are expected to be distinguished by the type of technology necessary to receive them.

After an extensive period of data collection and analysis (see Phase I report) particularly relative to the needs and concerns of Virginia libraries, we recommend the following pattern of network development.

- A Virginia library network will provide a range of services to all libraries in Virginia.

- The Virginia database will remain a key component in the provision of network services.

- Libraries will be able to take advantage of network services in a number of different ways, depending upon their own use and application of technology.

- A single communications network (a physical network) that extends throughout the state and enables libraries to interact with each other is the second key component that will determine the extent and pace of development of networking activities.

- Automated libraries will be able to communicate with other libraries directly through the communications network.

- Non-automated libraries, until they have acquired some equipment, will be able to communicate with other libraries through designated regional access points (libraries in a region that are automated). Ultimately, it is anticipated that all libraries will have some microcomputer equipment.

- Over the next 10 to 15 years more libraries will automate. However, it is not expected that all libraries will automate individually. Instead, we envisage the development of shared automated systems, on a regional basis so that the costs of automating can be shared.

- All automated libraries (whether automated on an individual or shared basis) will ultimately form nodes in a computer and telecommunications network that will provide the necessary infrastructure for automated networking activities.

- When all libraries contributing to the Virginia database are automated (i.e., using some form of automated library system to support circulation and online public access catalogs), and when interfaces to connect dissimilar automated library systems have developed so that they can be considered "transparent," the centrally stored Virginia database could be phased out. However, this will only hold true if either all libraries are contributing to the database and, therefore, are automated, or if non-automated libraries have the equipment necessary to access the automated network.

- In addition to providing some automated services, the network organization will also provide other services which require no special equipment for their use.

The Virginia library network will evolve as a new series of network nodes are created and interconnected. Because of the expressed concerns of loss of local or institutional autonomy, erosion of existing cooperative arrangements, need to retain membership in national or other out-of-state networks, increased burden on participating libraries, and erosion or deterioriation of local services, the network will be flexible enough to incorporate a number of different types of nodes, for example:

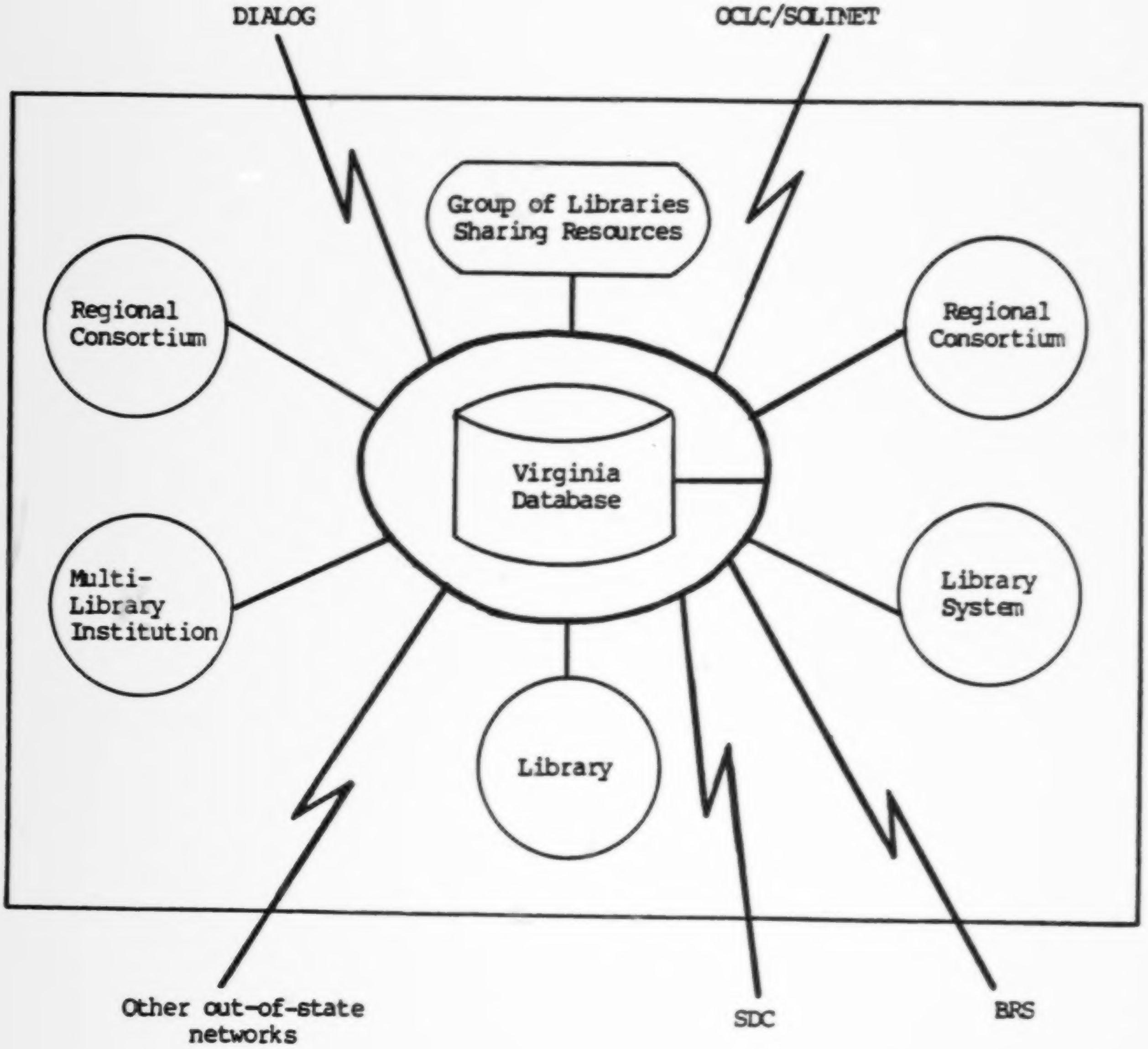
- a regional consortium of multiple types of libraries,
- a consortium of libraries of the same type,
- a single library or library system,
- a multi-library institution, and
- a group of libraries that are sharing a system, such as the libraries sharing the VTLS system at the State Library.

Each of these nodes will be able to communicate with any other node via a unified telecommunications network extending throughout Virginia as depicted in Figure 2. This telecommunications network will, initially provide electronic messaging access to the Virginia database, electronic ILL request placement and electronic document delivery. As the network continues to evolve, as more nodes automate the bibliographic holdings of member libraries, and as telecommunications networks incorporate more intelligence, the need for a centralized Virginia database of holdings is eliminated. However, until such time, the availability of an expanded, centralized Virginia database is crucial to successful network development in Virginia.

The technological makeup of a statewide library network depends, to some extent, on the functions to be performed. In reviewing the expressed needs and concerns of Virginia libraries that can be addressed through networking and the development of a more formal network configuration, the following potential network functions were identified:

FIGURE 2

THE VIRGINIA LIBRARY NETWORK


DIALOG
OCLC/SOLINET
Group of Libraries Sharing Resources
Regional Consortium
Regional Consortium
Virginia Database
Multi-Library Institution
Library System
Library
Other out-of-state networks
SDC
BRS

- communications
- development of the Virginia database
- development of union lists
- interlibrary loan
- document delivery
- cooperative collection development
- preservation and conversation of library materials
- document repository
- consultation and advising in the areas of automation and telecommunications
- education and training
- interfacing local/regional automated systems.

The first two of these functions are essential to further efficient and effective resource sharing and networking among Virginia libraries.

2.4.1 Communications

The availability of a single, unified communications mechanism linking all libraries in Virginia is seen as perhaps the most important component of a statewide library network. It will provide libraries with a basic infrastructure which can be used for a variety of purposes. We anticipate that the communications network will support all interlibrary messaging and interlibrary loan requesting among Virginia libraries, with the possible exception of interlibrary loan requesting among Virginia libraries using OCLC's ILL subsystem. The network can also support an electronic bulletin board and calendar of events of likely interest to Virginia librarians.

There are a number of different systems and services that could be used to support interlibrary communications in Virginia. The options include:

- ALANET
- VNET
- VINe
- other commercial networks, such as ITT's Dialcom

2.4.1.1 ALANET

ALANET is the American Library Association's electronic information service which has been in operation since January 1, 1984. At present the over 1,100 participants include libraries of all types, information centers, state agencies, professional associations, networks and consortia, library suppliers, and information brokers. The basic level of service includes access to electronic mail, a network bulletin board, interactive forms for interlibrary loans and other transactions (e.g., registrations, online ordering and claiming), the Library Supplier's Service Center menu, and to XMAIL, the interface with the Telex/Telegram/Mailgram network. Other services which may be selected include access to electronic newsletters and selected databases (e.g., UMI Article Clearinghouse, FEDNEWS, Official Airline Guide, VU/TEXT), and development of customized applications for associations, consortia, and state, local, and regional networks.

ALANET operates on ITT's Dailcom system, with dial access via Telenet, Tymnet, Uninet, Datapac (Canada) and even from overseas. Toll-free help numbers are available to provide assistance to ALANET subscribers. The system currently supports several statewide networks: the Illinois ILLINET Interlibrary Loan Network; ALINE, the Arkansas State Library Network; NYLINE, the New York Library-Line; SLOLINE, the State Library of Ohio Line; and MEDLINK, the Massachusetts Medical Information Link.

Fifteen libraries in the Tidewater Area [the 12 public libraries in the Tidewater Area Library Directors Council (TALDC) and three large academic libraries: Christopher Newport College, the College of William and Mary, and Old Dominion University] and the Virginia State Library are participating in a one-year, LSCA Title III-funded pilot project using ALANET to improve resource and information sharing among the participants. This pilot project will provide baseline data for evaluation of the utility and costs of regional and statewide electronic mail networks in Virginia.

Section 2.6.1 presents estimated costs for use of ALANET's basic level of service.

2.4.1.2 VNET

The Virginia Network for Educational Technology (VNET) is an electronic mail, bulletin board system and database developed by the Division of Instructional Media and Technology of the Virginia State Department of Education. The network become operational in January 1984 and is available for use by all public education institutions in the Commonwealth, including state-supported institutions of higher education. The addressable electronic mail and the bulletin board currently are restricted to queries and announcements related to educational technology, and messages are limited to 400 characters. An evaluation database is available for online searching and input of evaluations of educational software/courseware; search access is by program name and/or subject. A toll-free number is provided for access to VNET which is hosted on a PRIME computer system.

Potential use of VNET to support interlibrary communications should be explored, particularly to support school libraries in intradivisional sharing of library resources. Use of this network could provide the individual school libraries with immediate opportunities for networking, even though it might require use of equipment in the school office for placement of requests. However, the current restriction that VNET communications must be related to educational technology would need to be lifted in order to allow messaging related to sharing of book and non-book media resources. Message length limitations may require abbreviation of requests and/or placement of several messages.

2.4.1.3 VINe

VINe is the Virginia Integrated Network which is under development by the Virginia Department of Information Technology (DIT). Access to the network will be available to all Virginians and will not be restricted to use by state government agencies. VINe currently consists of a number of separate networks: SCATS, PBX/Centrex, remote job entry (RJE), educational television, dedicated and dial-up data lines, telefacsimile, and teleconferencing; in the future these networks will be operated on a shared, integrated basis. Additional networking features to be added in the future include digital video conferencing, electronic text mail, electronic voice mail, remote data archives, packet switching (data, and voice in the future), data protocol conversion, and gateways/teleports with linkages to out-of-state and international networks. The network design of VINe consists of a multimedia network on three levels:

- Primary Level: A five-node, state-of-the-art fiber optic cable "backbone" network will link the Washington, DC area of Northern Virginia, Richmond, Norfolk, Charlottesville and Roanoke. A satellite network will provide a back-up node to the fiber optic network and will also support voice and data communications outside the state and relatively inexpensive video transmission of educational TV programs throughout the entire state.

- Secondary Level: Various networking technologies, many of which are already in place, will be utilized to disseminate data to and from the primary network. These technologies include digital PBX, local area networks (LANs), gateways, microwave, packet radio, and land lines to the nearest primary node.

- Tertiary Level: Network users' equipment (telephones, PCs, data terminals, TVs, and telefacsimile transceivers) should be compatible with the secondary level network (in most cases) in order to provide a transparent interface with the network.

The primary level backbone network is expected to be in place before the end of 1987. DIT expects libraries to be one of the primary users of this system which could support electronic mail between users and could replace the 78 leased lines used by OCLC users with one line of sufficient bandwidth to accommodate the traffic. The network control center will also serve as billing agent; costs will be based on number of packets, rather than connect time. At the secondary level of the network, users will continue to pay the prevailing communications rates and may still experience problems with current installations and lack of capacity, since most of the secondary level network is already in place. At the tertiary or local level, DIT will provide guidelines for institutions who plan to replace their data communications equipment, so that network compatible equipment can be purchased.

2.4.1.4 Other Commercial Networks

A number of electronic mail networks are commercially available in the U.S. including ITT's Dialcom, The Source, CompuServe, etc. Each of these offers the capability of transmitting and storing textual messages through the network. However, they are general purpose networks and are not designed especially for libraries, unless a special capability has been superimposed on the network. The best example of such additional features is ALANET (discussed in 2.4.1.1, above) which is superimposed on ITT's Dialcom.

2.4.2 Development of the Virginia Database

As mentioned earlier, the Virginia database and its use as a tool for retrospective conversion, ongoing cataloging, and as a locator tool supporting interlibrary loan make it one of the most advanced of statewide databases. As a focal point in a Virginia library network, the Virginia database should continue to be developed and expanded to include more libraries' holdings. In particular, libraries holding special or unique collections should have their holdings entered into the database as a priority, with other libraries converting their holdings over time, using the Virginia database for the conversion effort as much as possible.

Currently the database is supported at The Computer Company (TCC) in Richmond, with input of machine-readable records to the database using the following mechanisms:

- online input and maintenance of records;
- batch input of records;
- tape loading of records from SOLINET tapes.

For future development and support of the database, we have identified four possible options:

- use TCC as at present or with modifications of current procedures;
- use SOLINET;
- use a commercial vendor;
- use the automated VTLS system of one or more Virginia libraries in expanded form.

The advantages and disadvantages of each option can be summarized as follows:

2.4.2.1 Use of TCC

Advantages are:

- TCC has been supporting the Virginia database from its inception to date and has, therefore, developed a relationship with libraries in Virginia as well as some understanding of needs of libraries.
- TCC provides a sophisticated display of local holdings records, a feature that is not available in many systems supporting union databases.

- TCC operates a large data processing facility and should be able to expand online access to the database with only minor effort and addition of equipment.

- TCC is located in Virginia and, therefore, this reduces the distance for telecommunications linkages between libraries and the central database.

- Monies paid for services provided within the Commonwealth would return in part to the state in the form of corporate income taxes.

Disadvantages are:

- TCC's primary focus is on medical insurance computing and not library computing, although they have developed their capabilities in the library field over the last few years

- There is a considerable amount of concern on the part of libraries in Virginia regarding the ability of TCC to truly understand the needs of librarians and the nature of bibliographic data.

- The Virginia database which is online at TCC does not provide locator information for out-of-state library holdings.

Estimated costs to use TCC to support a Virginia library network are presented in Section 2.6.2.

2.4.2.2 Use of SOLINET

Advantages are:

- SOLINET is an established, well-developed bibliographic service which provides online access to bibliographic data as well as providing other automation support services for libraries.

- SOLINET provides access to the entire OCLC bibliographic database and, therefore, it can be used as a locator tool for library materials not owned by Virginia libraries.

- SOLINET is already accessed online by a number of libraries in Virginia.

- SOLINET is developing a group access/state database service which will be offered at special rates. This service would allow other than full SOLINET members to search the bibliographic records input by Virginia libraries and to use the ILL subsystem for requesting these materials. Costs for this new service are very generalized, at present, and may represent potential cost savings for Virginia libraries.

Disadvantages are:

- Distance may make telecommunications costs high.

- SOLINET is a multi-state service and, therefore, the needs of Virginia libraries would not be of primary concern.

Estimated costs to use SOLINET to support a Virginia library network are presented in Section 2.6.2.

2.4.2.3 Use of a Commercial Vendor

Certain vendors (e.g., the McDonnell Douglas Corporation) plan to establish and operate regional time sharing computer services to support libraries of all types.

Advantages are:

- A vendor could operate a full library automation and networking support service for libraries in Virginia. This would enable libraries to have a contract with one vendor, rather than with several vendors.

- A vendor could customize its services for Virginia libraries.

- Some vendors have integrated library systems which can support more services than TCC and SOLINET currently provide (e.g., the McDonnell Douglas Corporation's URICA system).

Disadvantages are:

- Such a vendor service would duplicate automation and networking which is already in place, e.g., the State Library VTLS network.

- Costs potentially could be high.

- Time for system set-up and de-bugging would be required.

2.4.2.4 Use the Automated VTLS System of One or More Virginia Libraries in Expanded Form

Advantages are:

- The system would be under the operational control of a library or group of libraries within the state.

- The system could evolve according to priorities developed within the state.

- Expertise in system operations would be developed already.

- Users would pay for services that they received and would not potentially subsidize services provided to out-of-state libraries.

- The system could be expanded to support a larger network, as demonstrated in the West Virginia Library Network. The various VTLS installations within the state could be linked together using the new Network Intelligent Link (NIL).

- A new Micro VTLS system has been developed to support school libraries and small public libraries of 10,000 to 30,000 volumes. This system provides online searching, circulation control, and subject and authority control. It also has networking potential capabilities.

- An online multi-user interface to the Library of Congress (LC) database on videodisk is currently available. Libraries can download these cataloging records into their VTLS systems and can edit them as required. (Note, if an interface existed between VTLS and the Virginia database at TCC, the LC data would be available online, as well as the holdings information of other Virginia libraries.)

Disadvantages are:

- The system is not yet fully integrated to support all library functions. However, several new system offerings support automation of more functions. Micro Acquisitions may be used with VTLS in a non-fully-integrated mode; a MARC-based serials control system is in demonstration at VPI.

- The database would not provide access to holdings of out-of-state libraries.

- Current VTLS installations probably would need to upgrade their system configurations and telecommunications capabilities in order to support the needs of network users.

- Systems staff at these sites would need to be expanded to support additional network users. Also, additional staffing would be required so that other network support services could be provided.

2.4.2.5 Recommendations for the Development of the Virginia Database

Whichever group supports the Virginia database, we recommend that online access to the database be expanded to all libraries that contribute to the database, so that they will then be able to maintain their holdings information online. We estimate that this would involve approximately 100 libraries at the present time. Libraries requiring access to out-of-state holdings should continue to participate in nationwide networks such as OCLC.

Furthermore, we recommend that while CAVALIR should continue to be produced on microfiche, at least for another couple of years, that future editions be produced also on laser disk. At the same time as discussions are initiated with the organization supporting the database regarding its production on laser disk, a study should be made of microcomputer-based systems with laser disk capability and search software.

The contents of the database should also be expanded over time to include the holdings of increasing numbers of libraries, and to incorporate serial, audiovisual and other non-book materials.

Because of the recommendation for the development of regional consortia, the holding libraries' symbols should include a region designator. This would require a one time pass through the database to modify the symbols.

2.4.3 Serials Holdings Data

Approximately 38 percent of all intrastate interlibrary loans in Virginia are fulfilled by photocopies, most of which are copies of articles from serials. This percentage is higher than found in other states (for example in Pennsylvania, the average is 33 percent) and implies the need for expanded access to statewide serials holdings data. We recommend that the Virginia database be expanded to include the machine-readable serial title and holdings data included in the SOLINET-produced Tidewater Consortium Union List of Serials, the MARC serials data available from the

UVA-VPI conversion project, and holdings data available from similar union list projects.

These holdings data should be made available both in online and offline form (as a separate microform product as long as CAVALIR is produced on microfiche, and later integrated in the laser disk version of the Virginia database).

2.4.4 Interlibrary Loan

Interlibrary loan requests are transmitted by Virginia libraries to other libraries in the Commonwealth in a number of different ways, including the use of SOLINET, ALANET, telephone and mail. The online availability of the Virginia database as a locator tool leads to rapid identification of libraries holding needed materials. Having to switch to another system to place requests for items from locations identified through the database causes a delay in the process and could result in lower performance in terms of turnaround time. It is preferable to allow borrowing libraries to place the ILL request at the time of the database search, using the same system.

The implications for providing electronic support of interlibrary loan request placement vary according to where the Virginia database resides. As discussed earlier, four possibilities were identified:

- TCC

- SOLINET

- a commercial vendor

- the automated VTLS system(s) belonging to one or more libraries in Virginia

SOLINET currently offers member institutions access to the OCLC ILL subsystem which allows direct online placement of requests for materials located in the database. The new group access membership category offered by SOLINET allows non-member libraries to search the OCLC database for items held by libraries within the group's geographic boundaries. These non-member libraries retrieve abbreviated bibliographic records with the groups holdings information and may place requests online for needed materials. Retrieved records which do not display holdings information are held by out-of-group libraries. If interlibrary loan requests are to be placed for these non-group-owned materials, the non-member library must refer the request to a member library who will enter the request online and may charge the non-member library all costs associated with the transactions. If the Virginia database were place in SOLINET under the group access membership category, online database searching and direct online placement of requests could be implemented in the near future at participating libraries throughout the state. Access would also be provided to out-of-state holdings.

The other possible system sites for location of the Virginia database would not be able to provide access to out-of-state holdings information and would require lead time for development and implementation of a system to support statewide online placement of interlibrary loan requests.

A major concern of libraries in Virginia with the formalization of networking through availability of an expanded Virginia database is the increased burden that may be placed on lending libraries. Those libraries who are already lending considerably more materials than they borrow will not be able to support increased interlibrary loan demands without increased funding support. To alleviate this problem we recommend that a net lender compensation plan be implemented in Virginia.

In a study recently completed for the Commonwealth of Pennsylvania[5], King Research, Inc. identified the average costs nationwide of processing interlibrary loan requests for loans that are filled as:

- $6.52 for monographs
- $6.93 for serials
- $6.87 for other items.

The study further identified the alternatives to interlibrary loan as purchasing the needed items, and having patrons visit other libraries to read or use the needed item(s) there. The approximate costs of purchasing needed items versus the cost of lending and borrowing are displayed in Table 2.

Virginia libraries complete over 103,000 interlibrary loan transactions per year with other Virginia libraries. Of these, approximately 39,000 loans are for serial articles. The survey we conducted indicated that approximately 50 libraries in Virginia are net lenders, and these libraries in the aggregate, loaned approximately 42,000 items more than they borrowed. From these figures we can conclude that the total cost of lending among Virginia libraries is approximately $688,600; the total cost to compensate net lenders at $6.50 per filled loan is $273,000; the total cost to purchase requested materials rather than to use interlibrary loan is $584,800. Thus, a net lender compensation scheme would still yield annual savings to the Commonwealth of approximately $312,000 and cost $273,000. Another option for article delivery is the use of ALANET to access the UMI Article Clearinghouse and to purchase article copies at $4.00 each, plus the cost of regular mail or overnight delivery.

TABLE 2

COST OF PURCHASING VS BORROWING AND LENDING

Type of Material	Cost of Purchasing	Cost of Borrowing	Cost of Lending	Savings Through ILL
Monograph	$28.25	$ 5.70	$ 6.52	$16.03
Serial (Article)	$10.50	$ 4.25	$ 6.93	-$ 0.68
Other	$56.50	$ 6.22	$ 6.87	$43.41

SOURCE: King Research, Inc.

2.4.5 Document Delivery

Document delivery services represent another aspect of the interlibrary loan process. Too often sophisticated identification, location and ordering of documents lead to raised expectations in terms of delivery time. The ability to search an online database to locate needed materials, and to place a request for those materials is often frustrated by poor delivery mechanisms.

In a national study of document delivery, King Research, Inc. identified that approximately 30 percent of all requests are "rush", i.e., needed within 48 hours. On the average, 51 percent of rush requests are delivered within the required timeframe by interlibrary loan among libraries in a network, and 49 percent are delivered within 48 hours among libraries that do not belong to a network. With non-rush requests, approximately 65 percent are delivered within one week by libraries that do, or do not, belong to a network. The satisfaction with these delivery times can be significantly improved by the implementation of better delivery mechanisms.

The most extensive system of document delivery is Connecticar, a service of the Connecticut State Library. This service consists of seven routes serving 230 libraries between two and five days per week. Eight vehicles are used and approximately $56,000 of LSCA funds plus several salaries assigned to the State Library budget are required to maintain the service. This service appears to be the most extensive and most expensive of the statewide services.

Pennsylvania also operated its own fleet for four years but, after consulting with a transportation expert in 1980, began to contract out its delivery services. The contract with Purolator Courier calls for service three days per week to 110 libraries. Each library pays an annual fee for participation and an additional $0.33 in LSCA funds are provided for each item carried. The cost varies from $0.29 per item for libraries which use the service regularly to as much as $0.96 per item for infrequent use. Cost analyses in Pennsylvania have documented that the use of the service on a regular basis is less than one-third the cost of U.S. Mail.

Other states which use Purolator, UPS or other commercial couriers for a statewide or regional delivery network are Colorado, Florida, Idaho, Illinois, Indiana, Kentucky, Minnesota, Mississippi, New York, North Carolina, North Dakota, Ohio, and Wisconsin. We recommend that commercial courier services in Virginia be thoroughly reviewed in light of the proposed regional and nodal structure of a Virginia library network and that a document delivery service be designed and implemented. We envisage regional delivery services with switching points between regions.

For delivery of photocopied items (constituting 38% of all interlibrary loans or over 34,000 items per year) we recommend serious attention to recent developments in telefacsimile transmission. Use of telefacsimile to transmit short documents involves supplying one copy of each document and, therefore, would be subject to the same copyright guidelines which apply to making photocopies. There are two reasons why telefacsimile is of interest to this study. The first is that telefacsimile equipment has now reached a reasonable cost-performance ratio. Group III telefacsimile devices which can transmit at high speeds with good quality reproducton now cost approximately $4,000 (and double as stand-alone photocopiers). The total costs to an individual library to participate in a regional telefacsimile project are as follows:

• Telefacsimile transceiver (Group III)	$3,936
• Controllers, auto dial/receive	450
• Telephone line charges - $100 per month	1,200*
• Installation of equipment	32
• Maintenance of equipment	439*
• Supplies	100*

Thus, the total costs are a $4,418 one-time cost, plus $1,739 per year in recurring costs (marked with an asterisk).

A second reason why telefacsimile is becoming increasingly attractive is that commercial services are beginning to offer electronic delivery of journal articles at a cost that is competitive with the costs of lending and borrowing. This is especially so when group discounts are negotiated, such as the $4.00 per article charged by UMI to CAPCON members. For serial loans, we recommend the investigation of various commercial document delivery services, such as UMI, ISI, Information Store, Information-On-Demand, etc. The network should negotiate discounts and libraries could establish deposit accounts.

Once telefacsimile transceivers are in place in libraries, they can be used for a variety of interlibrary communications. In Florida, for example, libraries are using telefacsimile devices for transmission of interlibrary loan requests, as well as for document delivery. These devices also may be used for transmission of requests for subject searches of reference databases.

2.4.6 Cooperative Collection Development

Cooperative collection development is of importance to libraries in Virginia because of the inability of most libraries to acquire all the materials that are needed to support the information needs of their patrons. However, in order to properly coordinate collection development activities, knowledge of statewide holdings is essential. Cooperative collection development should begin when the statewide bibliographic database has been expanded (although it is unnecessary to wait until it is 100% complete). Generally, macro-level collection development decisions can be made along the lines currently practiced by some academic libraries.

Finally, special collections throughout the state should be recorded at least in terms of subject matter, coverage and location. A directory of special collections in Virginia could then be produced. This could serve as the basis for discussion of cooperative collection development policies, as well as of priorities for retrospective conversion.

2.4.7 Preservation and Conservation of Library Materials

No single library can afford the necessary expertise and equipment to operate its own preservation and conservation unit. With increasing concern on the part of librarians in the preservation of collections, particularly special and unique collections, such a facility could be operated more efficiently at the statewide level (or even multi-state level).

A new regional preservation agency has recently been announced -- the Mid-Atlantic States Cooperative Preservation Service (MASCPS). The agency will coordinate preservation microfilming, make plans to increase microfilming capability, monitor emerging technologies suitable to library needs, share bibliographic data on microfilm and other master copies with automated networks. Funding of $1.2 million is being provided by the EXXON Foundation.

Services such as those provided by MASCPS and the Northeast Preservation and Conservation Center should be studied by the Virginia network for possible replication in Virginia. The use of existing services should also be explored as a potential contract service to the Virginia library network.

2.4.8 Document Repository

Virginia librarians have expressed considerable need for establishment of shared document storage facilities for infrequently-used materials. Two basic approaches have been identified for setting up shared facilities:

- centralized storage
- regional storage

We recommend development of regional storage facilities in order to take advantage of recommended regional document delivery mechanisms (see Section 2.4.5). The regional storage facilities should be established as nodes in the network so that direct requesting of materials and document delivery can be achieved without the need for processing by intermediaries.

These regional storage facilities may utilize existing space available at a library or libraries in a region, or they may be located in commercial warehouse space. Determination of potential storage sites, the amount of material to be stored, the method(s) for filing/shelving materials, and the ownership of the stored materials will need to be made at the regional level.

2.4.9 Consultation and Advisory Services

With the development of a Virginia library network and the determination and adoption of acceptable standards, consultation and advisory services will become an important component of network services. There appear to be three areas of immediate need for such services:

- Automation, including retrospective conversion
- Telecommunications
- Preservation and conservation.

We therefore recommend that the network have three staff consultants with expertise in the three areas. The role of these consultants will be to work with libraries in Virginia to help with automation and network development activities, to interact with suppliers of appropriate systems and services, and to disseminate information about new developments to the Virginia library community.

2.4.10 Education and Training

Any new development or activity brings a need for education and training. In Virginia, we perceive the need for several different kinds of education and training programs.

The need was expressed frequently by Virginia librarians for a coordinated continuing education program for all levels of library personnel. The lack of a library school in Virginia is one of the main reasons for this need. In particular, there is a need for courses and programs within each region, on a regular basis.

In developing a curriculum for continuing education of library personnel in Virginia it is important to solicit the particular needs of libraries of different types, sizes and geographic locations. To this end, we recommend the establishment of a Continuing Education Committee to regularly monitor education and training needs and to design a program of courses, seminars, workshops, etc. The Committee should also investigate the feasibility of granting C.E. units for completion of courses which relate to certification requirements.

Another area where education and training is required is networking activities in Virginia. There will be an immediate need to disseminate information relating to the feasibility of and plans for statewide library networking and to collect feedback from librarians throughout the state. We anticipate a fairly intensive effort of this type being conducted over a six-month period following distribution of this report.

As the networking activities evolve, there will be a need to continually keep the library community up-to-date with developments and to train them in the use of new or modified network services. A key component of each new service offering will be the preparation of appropriate "user documentation" and the design, development, and implementation of corresponding education and training programs across the state.

The network Continuing Education Committee should coordinate its educational program with the Title III Continuing Education Committee.

2.4.11 Interfacing Local/Regional Automated Systems

We anticipate that development of sophisticated transparent interfaces between the various local/regional automated systems used by Virginia libraries/groups of libraries will be a long-term activity.

Several projects are in process for development of system interfaces. The SNUAB and staff of the proposed Network Division should start by monitoring projects such as the Irving Project in Colorado and LC's Linked Systems Project and Common Network Language (CNL) definition. It is expected that as the CNL develops it will be provided by the vendors of automated library systems as an optional feature, and eventually as a standard feature.

If progress on these interface projects is very slow and funds for programming are available, the Network Division could sponsor development of interfaces between systems.

At present, interfaces would need to be developed between CLSI, DataPhase, Dynix, Geac, LS/2000, NOTIS, VTLS, plus other in-house developed systems.

2.5 Summary of Recommended Service Offerings

We recommend that the following services be provided by the Virginia library network:

- provision of a single communications and electronic mail system for most libraries in Virginia; school divisions would serve as network nodes for their respective schools;
- continued maintenance of the Virginia database;
- expansion of the Virginia database to include the holdings of additional libraries;
- expansion of the Virginia database to include currently-available serials holdings data in MARC format;
- enhancement of the location symbols in the database to include regional designators;
- provision of online access to the database to at least all contributing libraries;
- distribution of CAVALIR on microfiche with ultimate replacement by laser disk, and more frequent distribution of updates;
- provision of statewide, regional, and type-of-library database products;
- provision of an interlibrary loan requesting capability on the system supporting the database so that libraries which are online can place requests at the time of the search;

- implementation of a compensation plan for net lenders to in-state libraries; libraries which are compensated should not charge for loans and should provide service within established standard turnaround times;

- coordination of regionally developed delivery systems and the negotiation of volume discounts for contracted courier services (if used);

- coordination of acquisition of telefacsimile transceivers by libraries in Virginia so that all equipment purchased is campatible, and volume discounts can be negotiated with the supplier;

- development of standards for network participation, including bibliographic standards, equipment standards, procedural standards, protocols, etc;

- development of a cooperative collection development policy for Virginia libraries;

- services related to the preservation and conservation of materials, either through a contract with one of the regional services or else through the establishment of a center for preservation and conservation in Virginia;

- coordination and support for the design and development of regional respository programs;

- consulting and advisory services in the areas of automation, telecommunications, and preservation and conservation;

- provision of education and training programs statewide;

- monitoring and disseminating information about interfaces to link dissimilar automated library systems, and perhaps actual design and development of interfaces to link systems in Virginia libraries.

2.6 Costs of Specific System and Service Options

In the previous subsection we defined different options for specific systems and services that could be employed by a developing library network organization in Virginia. The options were defined for each potential network service, and there was considerable overlap. Several basic options were identified:

- use of ALANET, VNET or other electronic mail network
- use of TCC or SOLINET for supporting the Virginia database
- use of a commercially available automated system to support a shared regional database, as well as possibly circulation control and online public access catalogs (e.g., VTLS, URICA, etc.)

The vendors/suppliers of each of these options were asked to provide us with cost data which we could use to estimate the costs of providing various network services. The configuration for which they were asked to provide costs was described to them as follows:

The future Virginia library network (current size: 500 libraries; future growth to 2250 libraries) should be able to support the following functions at the indicated levels/volumes:

- online access/maintenance to the Virginia database* (current size: 1.9 million unique titles; estimated size in 1995: 10 million unique titles);

---

* The Virginia database currently is produced and supported by the Computer Company (Richmond, Virginia), under contract to the Virginia State Library. OCLC archival tapes (data from 53 libraries) and other sources of machine-readable bibliographic records from Virginia libraries are matched against LC MARC tapes to create the Virginia database which contains holding data for 92 Virginia libraries. (Note: the Virginia database has expanded in size since the vendors were given the above-listed information concerning the database.)

- annual production of the Virginia database on microfiche, with two supplements per year (this function may be phased out);

- production of the Virginia database on CD-ROM,* three times per year;

- subject search capability (online and with CD-ROM);

- Boolean search capability (online and with CD-ROM);

- electronic messaging to support interlibrary loan request placement and other requests/communications (current ILL request placement: 82,000 requests per year);

- development of a Virginia union list of serials (online, microfiche and CD-ROM), with capability for identification of regional holdings (165,000 serial titles).

Other functions that the Virginia library network may perform in the future include:

- system-based protocols to support regional interlibrary loan;

- online indication of circulation status of materials located within the region/state;

- provision of online public access catalogs to network members, as needed;

- interconnection/interface of various MARC-based library automation systems which currently are in operation in libraries throughout the state;

- automation of various library functions (e.g., acquisitions, funds accounting, serials control) for libraries which cannot afford their own automated integrated library systems.

---

* Compact disk - read only memory; a specific type of laser disk.

Vendors were asked to supply generalized costs (one-time costs and recurring costs per year) for the first group of networking functions listed above, indicating which functions their organizations can currently support and which are under development. For the second group of networking functions listed above, vendors were asked to indicate which functions their organization can currently support, and to include costs for these functions as time permitted.

2.6.1 Use of ALANET, VNET, or other electronic mail network

Using the basic level of service offered by ALANET, libraries would be authorized access to the entire ALANET mail directory (currently approximately 1,200 mailboxes), to systemwide forms, to the instructional texts in the system, to the ALABOARD bulletin board, to the Library Supplier's Service Center menu, and to XMAIL -- the interface to the Telex/Mailgram network. Section 2.4.1.1 presents a detailed description of ALANET and all of its service offerings.

The costs of using the basic level of service are as follows:

One-time sign-up fee	$ 45
IDs for each library	$ 2
Billing fee	$ 99 per year per 35 IDs
ALANET Miniguide	$ 4
Reference card	$ 0.5
Connect time	$ 17 per hour (prime time)
Text storage	$ 3 per ID per month

The estimated costs for 500 libraries to participate in ALANET services at the level defined above are $225,190 for the first year and $222,495 for each subsequent year. Details of how these estimates were derived can be found in Appendix A of this report.

In order to take advantage of ALANET, each library must have a terminal or a microcomputer with a modem. If we were to assume that each of 500 libraries in the state would use ALANET plus other Virginia library networking services, we would recommend that libraries acquire an IBM PC or compatible microcomputer at a cost of about $3,000.

In our figure of 500 libraries, we include all public, academic and special libraries in the state, and all school divisions. For the approximately 1,750 school libraries (and their 135 school divisions), we recommend that the use of VNET to support interlibrary communications should be investigated. Schools would then be able to communicate directly with each other and with their division headquarters using VNET, and with other libraries in the state indirectly through the divisions and ALANET. If VNET is not made available to school libraries, individual libraries should consider the use of ALANET or the DIT network as appropriate.

2.6.2 Use of TCC, SOLINET or Auto-Graphics for Supporting the Virginia Database

The costs to maintain the Virginia database in its current form and to include other libraries' holdings annually are summarized in Table 3 for each of the three database service vendors: TCC, SOLINET/OCLC, and Auto-Graphics. According to the cost data provided to us, TCC appears to offer the database support services for the least cost, and Auto-Graphics for the greatest. The costs for all three vendors were developed using the same assumptions as to the number of libraries that would participate in the development of the database, and the timing of their participation. Detailed costs are presented in Appendix A.

Further analysis of the costs reveals that the service charges of SOLINET/OCLC and Auto-Graphics are estimated to be higher than those of TCC. However, TCC might be offering volume discounts in its current contract with VSL that could be offered by the other vendors at the time of negotiations. One further difference is that all libraries in the TCC and Auto-Graphics options are including their holdings in the Virginia database. In the SOLINET/OCLC option, only full and associate members of SOLINET/OCLC are able to do so. Selective members' records are not loaded into the database; small libraries would probably be able to afford selective membership only.

Another important factor in these cost estimates is that there are various alternatives to all libraries in a network having online access to a cataloging database. All the vendors offer options and are developing

TABLE 3

SUMMARY OF ANNUAL COSTS TO MAINTAIN/EXPAND THE VIRGINIA DATABASE BY DIFFERENT VENDORS

	TCC ($)	SOLINET/OCLC ($)	AUTO-GRAPHICS ($)
1986	154,000	100,000	680,000
1987	154,000	99,000	680,000
1988	172,000	399,000	738,000
1989	204,000	503,000	828,000
1990*	318,000	2,021,000	1,200,000
1991	356,000	1,495,000	1,485,000
1992	615,000	1,765,000	2,355,000
1993	656,000	1,801,000	2,968,000
1994	623,000	1,727,000	3,153,000
1995	332,000	1,427,000	2,810,000
1996	332,000	1,427,000	2,810,000
1997	332,000	1,427,000	2,810,000
1998	332,000	1,427,000	2,810,000
1999	332,000	1,427,000	2,810,000
2000	332,000	1,427,000	2,810,000
2001	332,000	1,427,000	2,810,000

SOURCE: King Research, Inc., from Data Supplied by Vendors

* The large cost increase is due to the assumptions made regarding retrospective conversion efforts.

new options which should be investigated more thoroughly at the time when network services are to be contracted out. Libraries which do not have their holdings in machine-readable form will need to consider the costs associated with retrospective conversion (see Appendix B, Section B.1.1.2).

2.6.3 Use of a Commercially Available Automated System to Support a Shared Regional Database and Other Services

The development of shared regional automated systems is seen as a major trend that will further the development of library networking and resource sharing in Virginia. Two levels of shared system are envisaged with the regions progressing from one level to another over time.

The first level is the sharing of an automated system to support a regional database for the purposes of interlibrary loan and circulation control. The one time costs and annual costs for establishing and operating such shared systems in each region are displayed in Table 4. Note that these costs assume that all public, academic and special libraries, and each school division will participate in the shared system.

Each regional system costs on the order of magnitude of $2 million to establish, and $800,000-900,000 to maintain and operate. These costs represent a cost of approximately $10,500 plus $4,200 per year per terminal. In configuring these regional systems (see Appendix A for more details), the number of terminals varies according to the size of the library participating. The average costs for libraries of various sizes to participate in a shared regional system are shown in Table 5.

The second level is the enhancement of the shared system to support online public access catalogs. The costs to upgrade the regional systems to support online public access catalogs in each of the participating libraries are displayed in Table 6. Each regional upgrade costs on the order of magnitude of $2-4 million plus $300,000-400,000 per year for upkeep. This represents an average of $3,087 plus $367 annually per online public access catalog terminal. The average costs for libraries of various sizes to upgrade to online public access catalogs on their shared regional system are displayed in Table 7.

TABLE 4

SUMMARY OF START-UP AND ANNUAL MAINTENANCE/OPERATIONAL COSTS TO MAINTAIN REGIONAL DATABASES, ILL AND CIRCULATION, ON AN INTEGRATED, AUTOMATED LIBRARY SYSTEM

Region	One Time Costs ($)	Annual Recurring Costs ($)
Northern	2,518,865	905,633
Northwest	1,817,485	779,635
Piedmont	2,276,057	939,043
Southern	1,833,105	737,877
Southwest	2,046,107	812,188
Tidewater	2,175,055	888,172
All	12,666,674	5,062,548

SOURCE: King Research, Inc.

TABLE 5

AVERAGE COSTS TO PARTICIPATE IN A SHARED REGIONAL SYSTEM SUPPORTING A SHARED DATABASE, INTERLIBRARY LOAN, AND CIRCULATION CONTROL

Size of Library	One Time Costs ($)	Annual Recurring Costs ($)
< 10,000 volumes/items	10,500	4,200
10,000 - 99,999 volumes/items	12,600	5,040
100,000 - 500,000 volumes/items	31,500	12,600
> 500,000 volumes/items	126,000	50,400

SOURCE: King Research, Inc.

TABLE 6

SUMMARY OF COSTS TO UPGRADE REGIONAL AUTOMATION SYSTEMS TO SUPPORT ONLINE PUBLIC ACCESS CATALOGS

Region	One Time Costs ($)	Annual Recurring Costs ($)
Northern	3,410,752	398,663
Northwest	2,537,746	326,388
Piedmont	3,764,992	452,808
Southern	2,265,031	286,693
Southwest	2,080,154	323,810
Tidewater	3,499,868	415,690
All	18,558,543	2,204,052

SOURCE: King Research, Inc.

TABLE 7

AVERAGE COSTS TO UPGRADE SHARED REGIONAL SYSTEM TO SUPPORT ONLINE PUBLIC ACCESS CATALOGS

Size of Library	One Time Costs ($)	Annual Recurring Costs ($)
< 10,000 volumes/items	15,435	1,835
10,000 - 99,999 volumes/items	18,522	2,202
100,000 - 500,000 volumes/items	46,305	5,505
> 500,000 volumes/items	185,220	22,020

SOURCE: King Research, Inc.

2.6.4 Analysis of Distribution of CAVALIR on Microfiche Versus Laser Disk

The Virginia database is made available to Virginia libraries as COM product, CAVALIR, once per year with two supplements each year. At the present time, the fiche set (3,255 fiche) is distributed to 271 libraries. The current cost of each fiche set is $850.00.

We recommend a two-stage expansion of network services:

- expansion to all public, institutional, academic and special libraries, and to each school district

- expansion to all 2,108 individual libraries.

Thus, at the first stage, services would be provided directly to approximately 500 libraries, and at the second stage to approximately 2,100 libraries.

In distributing CAVALIR at its current size to 500 libraries, the annual total cost would be $425,000.00. There may also be additional one-time costs for those libraries that do not have a fiche reader. The estimated cost per fiche reader is $150.00.

The total cost to provide CAVALIR on the new laser disk technology (specifically CD-ROM) to 500 libraries is $137,500 for three issues per year. It is important to note that each issue on laser disk would be of the entire catalog and thus would replace the previous version. (As with the fiche product, superceded versions could be donated to school libraries.) Furthermore, the entire catalog would fit on 3 or 4 disks. In order to use the laser disk, each library would need a microcomputer, laser disk player and interface, and appropriate search structure. The searching capability offered through the laser disk technology (incorporating online author, title, subject, holding library, keyword and boolean searching) is also much more flexible than serial searching using the fiche product.

However, the laser disk product requires equipment capable of reading and decoding the data embedded in the disk, and software necessary to search it. Each library using the disk product would need the following equipment:

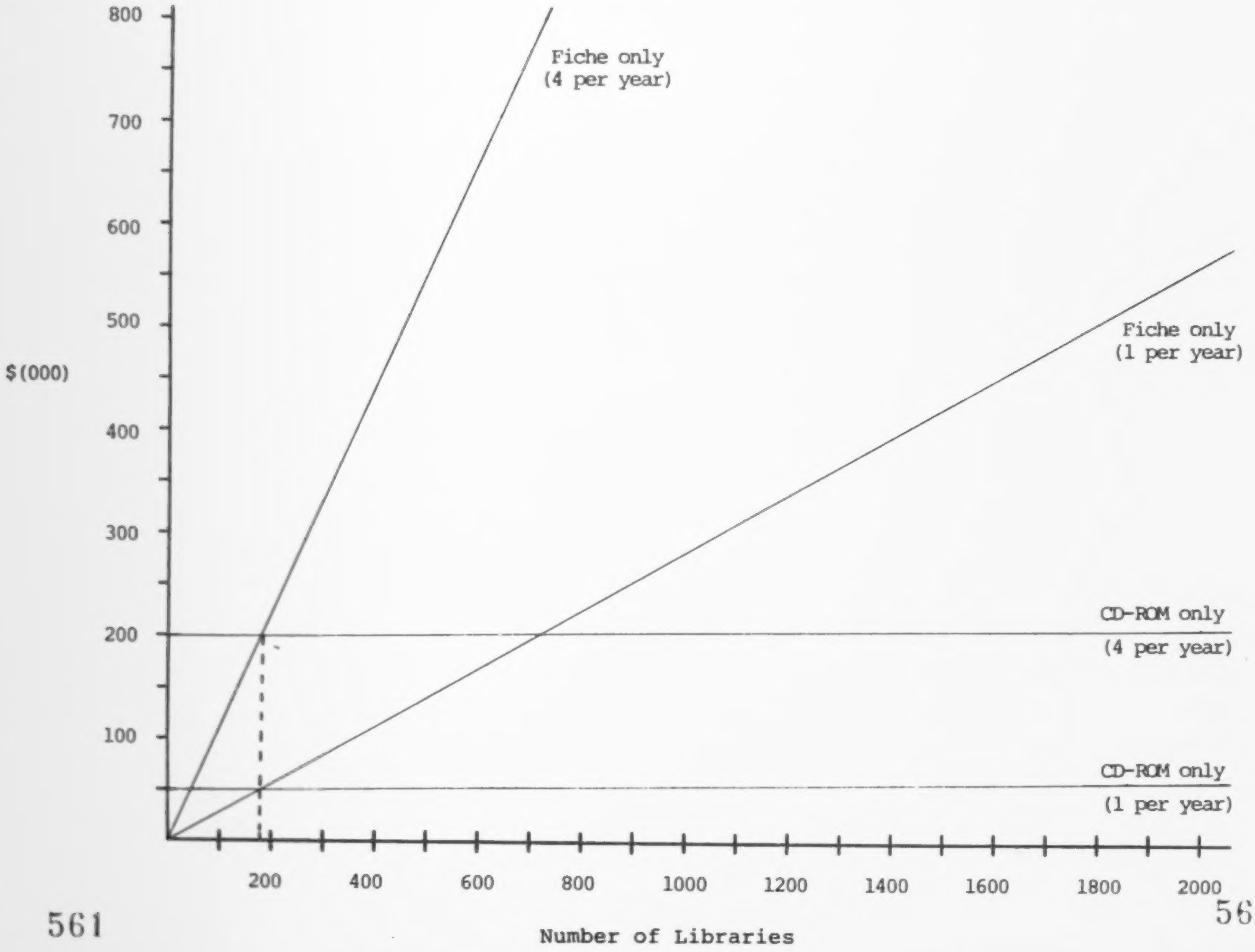
- IBM PC-compatible microcomputer ($1,500 - $3,000)
- CD-ROM player ($850)

Thus, for a minimum initial investment of approximately $2,350 a library would be able to take advantage of the laser disk technology. In addition, the library would have a piece of equipment that would enable them to use the electonic mail/communications network adopted by the Virginia library network, conduct searches of other databases, do word processing and spreadsheet analysis, etc.

In looking at the tradeoff between a fiche version of CAVALIR and a CD-ROM version per year, we estimated the cost to distribute each product in 1 annual issue and in 4 annual issues as shown in Figure 3. Regardless of the number of issues produced per year, the breakeven point is approximately 180 libraries. Thus, if CAVALIR is distributed to fewer than 180 libraries it is less expensive to distribute on fiche. If CAVALIR is distributed to more than 180 libraries (and in fact it is distributed to 271 libraries), it is less expensive to distribute on laser disk. Note, that the breakeven analysis only takes into account the costs to produce CAVALIR, and not the one time cost to acquire the equipment to use CAVALIR in either format. However, the costs quoted above do include the estimated cost of search software customized to search CAVALIR using laser disk technology and the cost to remaster the entire database with each issue to facilitate retrieval.

Based on this analysis, we recommend that libraries be encouraged to acquire IBM PCs (or compatible microcomputers) so that they can take advantage of the laser disk technology. Those libraries that already have PCs should be encouraged to purchase a laser disk player that meets certain specifications, so that compatibility is assured and the same search software can be used by all libraries.

Figure 3 -- Comparison of Costs for CAVALIR Production on Fiche and CD-ROM



2.7 Recommended Systems and Services

The following recommendations are made regarding specific systems and services to use in the development and operation of a Virginia library network:

- The Virginia database be maintained and CAVALIR produced by TCC until the current contract expires. TCC appears to offer the best mix of services and costs at the present time, but other services such as SOLINET, Auto-Graphics, UTLAS, etc. should be offered the opportunity to bid from the new contract.

- ALANET should be used for interlibrary communications among all public, academic and special libraries and school divisions. School libraries and school divisions should use VNET for communicating among themselves. The school divisions will act as access points to other types of libraries on behalf of school libraries, via ALANET.

- The development of shared regional automated systems should be encouraged. Such systems can handle entire regions or sub-regions but should allow all types of libraries to take advantage of automation. Many different systems could be used but the following are preferable as they are already in use in one or more libraries in the state (CLSI, Dataphase, DRA, Dynix, Geac, LS/2000, NOTIS, VTLS).

2.8 Recommended Levels of Membership/Participation in a Statewide Network

Network membership should be open to all libraries in Virginia regardless of type, size, geographic location or stage of automation. All libraries will be eligible for basic membership services which are defined below.

In order to reinforce the existence of a network organization and the fact that all libraries are eligible for membership, we recommend that a nominal fee for membership be charged. We recommend that the initial maximum membership fee be $75.00.

In return for the annual membership fee, libraries would be eligible for basic network services:

- Information about networking activities, automation developments, telecommunications developments, education and training offerings, calendar of events, etc.;
- Free copies of CAVALIR on laser disk issued at least 3 times per year;
- Advice and consultation relating to automation, telecommunications, and preservation and conservation.

In addition to the basic network membership we anticipate four levels of membership:

- regional nodes - full participants with in-house or shared MARC-based automated library systems, who will provide certain services within their respective regions so non-automated libraries can access automated network services; eligible for compensation for services provided;
- full participation in all automated activies as a contributor to the Virginia database and a supplier of interlibrary loans; eligible for ILL compensation;
- partial participation in automated activities as a non-contributor to the database, but accessing the database using either a microcomputer or terminal, and having direct access to the electonic mail/communication network;

- non-automated participation-receiving CAVALIR or fiche, and communicating requests by mail or telephone to designated regional nodes.

Requirements for eligibility at each of these levels are:

- Regional node
  - have an in-house (or shared) MARC-based automated library system;
  - agree to accept requests from non-automated libraries and input them into the electronic mail/communications system;
  - agree to investigate the feasibility of sharing their in-house (or shared) automated library system with non-automated libraries;
  - agree to act as repository for last-copy items;
  - agree to participate in a collection development plan when it becomes available;
  - as for full participation (see below).

- Full participation:
  - make MARC formatted machine readable records available for the Virginia database;
  - agree to provide interlibrary loans to Virginia libraries;
  - agree to pick up ILL requests from an electronic mail box daily;

- Partial participation

  - have a terminal or microcomputer (preferably an IBM-compatible PC);

  - have a modem, serial interface card, or coupler for telecommunications access to the network.

- Non-automated participation

  - agree to follow network protocols and standards when defined;

  - agree to access automated network services through designated regional nodes.

2.9 "Hosting" Other Libraries' Databases

Libraries in Virginia were asked to indicate their willingness to "host" other libraries' databases on their automated systems. The computer system at each "host" library will store the data from other libraries and will support operational access, via computer terminals, to that data by the staff and patrons of the respective libraries. The 10 libraries which indicated that they would be willing to act as "hosts" are listed below:

LIBRARIES THAT INDICATED A WILLINGNESS TO "HOST" OTHER LIBRARIES' DATABASES ON THEIR AUTOMATED SYSTEMS

REGION	LIBRARY	TYPE OF LIBRARY*	SIZE**
1	Tazewell County Public Library	Public	B
3	Portsmouth Public Library	Public	C
4	Virginia State Library	State Library/public	D
4	Richmond Public Library	Public	D
4	College of William and Mary	Academic (1)	D
4	Virginia Commonwealth University	Academic (1)	D
5	Alexandria Library	Public	C
5	Marymount College	Academic (2)	C
5	U.S. Geological Survey Library	Special (federal)	D
6	Washington and Lee University	Academic (2)	D

* Type of Library Key:

(1) state-supported
(2) private
(3) community college

**Size Key:

A - <10,000 volumes/items
B - 10,000 - 99,999 volumes/items
C - 100,000 - 500,000 volumes/items
D - >500,000 volumes/items
E - Unknown

Another 25 libraries indicated that they may be able to "host" other libraries databases on their automated systems. These additional libraries are:

LIBRARIES THAT INDICATED THAT THEY MAY BE ABLE TO "HOST" OTHER LIBRARIES' DATABASES ON THEIR AUTOMATED SYSTEMS

REGION	LIBRARY	TYPE OF LIBRARY*	SIZE**
1	Virginia Polytechnic Institute and State University (VPI)	Academic (1)	D
2	Campbell County Public Library	Public	B
3	Chesapeake Public Library	Public	C
3	Eastern Shore Public Library	Public	B
3	Newport News Public Library System	Public	C
3	Christopher Newport College	Public	C
3	Eastern Virginia Medical School	Academic (2)	B
3	Old Dominion University	Academic (1)	D
4	Henrico County Public Library	Public	D
4	Chesterfield County Schools	School	E
5	Fairfax County Public Library	Public	D
5	Mary Riley Styles Public Library	Public	B
5	Prince William Public Library	Public	C
5	George Mason University	Academic (1)	D
5	Mary Washington College	Academic (1)	C
5	Northern Virginia Community College	Academic (3)	C
5	Fairfax County Schools	School	C
5	Fauquier County Schools	School	E
6	Jefferson-Madison Regional Library	Public	C
6	Shenandoah County Library	Public	B
6	Staunton Public Library	Public	B
6	Waynesboro Public Library	Public	C
6	James Madison University	Academic (1)	C
6	Virginia Military Institute	Academic (1)	C
6	Harrisonburg City Schools	School	B

*[See key on previous page]
**[See key on previous page]

Other libraries indicated that they would be unable to act as hosts. Some of these libraries included state-supported academic libraries and public libraries which would be logical choices for "hosting" other libraries' databases. As networking plans develop at the regional level, these libraries may reconsider their potential roles in networking.

Based on our review of libraries expressing an interest in "hosting" and libraries who provided indefinite or no responses to the questions on "hosting", we have identified potential "host" libraries in the various regions of the state. All of these libraries have over 100,000 volumes/items in their collections.

This list presents a beginning point for discussion and identification of potential "hosts" within each region. As regional plans develop, other candidates for "hosting" may emerge.

RECOMMENDED POTENTIAL CANDIDATES FOR "HOSTING" OTHER LIBRARIES' DATABASES ON THEIR AUTOMATED SYSTEMS

REGION	LIBRARY	TYPE OF LIBRARY*
1	Lonesome Pine Regional Library	Public
1	Roanoke Public Library	Public
1	Virginia Polytechnic Institute and State University (VPI)	Academic (1)
2	Lynchburg College	Academic (2)
2	Sweet Briar College	Academic (2)
3	Charles H. Taylor Memorial Library	Public
3	Chesapeake Public Library	Public
3	Newport News Public Library System	Public
3	Christopher Newport College	Public
3	Old Dominion University	Academic (1)
3	Portsmouth Public Library	Public
3	Tidewater Community College	Academic (3)
4	Henrico County Public Library	Public
4	Randolph-Macon Woman's College	Academic (2)
4	University of Richmond	Academic (2)
4	Virginia State Library	State Library/public
4	Richmond Public Library	Public
4	College of William and Mary	Academic (1)
4	Virginia Commonwealth University	Academic (1)
5	Arlington County Department of Libraries	Public
5	Alexandria Library	Public
5	Fairfax County Public Library	Public
5	George Mason University	Academic (1)
5	Marymount College	Academic (2)
5	Mary Washington College	Academic (1)
5	Prince William Public Library	Public
6	Jefferson-Madison Regional Library	Public C
6	Waynesboro Public Library	Public C
6	James Madison University	Academic (1) C
6	Virginia Military Institute	Academic (1) C
6	Washington and Lee University	Academic (2)

*[See key on second previous page]

RECOMMENDATIONS

1. A more formal library networking configuration should be developed in Virginia so that citizens of the Commonwealth can have easy and rapid access to the total library and information resources in Virginia.

2. A more formal networking structure should be established through the development/amendment of appropriate legislation. Current legislation does exist which gives the State Library Board responsibility for establishing standards for networking grants, granting funds for networking, establishing standards and priorities for networking, establishing and operating communication centers and other networking services, and for acting upon networking advice presented to the Library Board by the State Networking Users Advisory Board (SNUAB).

   The Virginia library network should be established as a new division of the Virginia State Library (VSL) to take advantage of the existing legislation. This division should be established with new funds and new positions.

3. The network organization will require its own staff including, a minimum of five positions in FY1988:

   - Director
   - Networking Automation Consultant
   - Telecommunications Consultant
   - Administrative Assistant/Secretary
   - Typist

   In FY1993 an education/training consultant and a typist should be hired, and in FY1998 a preservation/conservation consultant and an administrative assistant should be hired.

These positions should be established at the outset as new VSL staff positions. It is important that these positions be created to distinguish VSL Network Division staff with responsibilities to all types of libraries in Virginia from other VSL staff with responsibilities primarily to public and institutional libraries.

4. Certain network support services should be obtained under contract, since it is not necessary to duplicate services available elsewhere. Specific services to be obtained under contract include:

   - support of the Virginia database, including provision of online access to the database;
   - production of CAVALIR and other products;
   - provision of the capability for online placement of interlibrary loan requests and other online messaging (e.g. electronic mail, electronic bulletin board).

   Other network services also may be obtained from contractors. However, detailed performance standards should be specified in the RFP(s) and the performance of the contractor(s) should be monitored carefully.

5. The Virginia database should be maintained and CAVALIR produced by TCC until the current contract expires. TCC appears to offer the best mix of services and cost at the present time but other services such as SOLINET, Auto-Graphics, UTLAS, etc. should be offered the opportunity to bid for the new contract.

6. The network should be governed by the State Library Board, with the SNUAB and the State Librarian providing input and advice on the development of networking policies. The SNUAB should establish various subcommittees to formulate draft policies on networking issues for submission to the State Library Board and to the State Librarian. Representation on the subcommittees should include appropriate members from the statewide library community.

The State Librarian should review networking policies drafted by the SNUAB and should recommend to the State Library Board that the policies be approved or modified. The administration of the implementation of networking policies approved by the State Library Board should be the responsibility of the State Librarian and of the Network Division Director.

The entire SNUAB, or a subcommittee, should meet periodically with the State Librarian and the Network Division Director in order to discuss networking issues requiring policy guidelines.

In order that the SNUAB be fully representative of the library community in Virginia, it is recommended that an expanded SNUAB be formed to include the following members:

- 2 public librarians (1 representing large public libraries and 1 representing small public libraries)
- 2 academic librarians (1 representing public academic institutions and 1 representing private academic institutions)
- 1 community college librarian
- 2 school librarians (1 representing public schools and 1 representing private schools)
- 2 special librarians (1 representing publicly-funded special libraries and 1 representing privately-funded special libraries)
- 1 institutional librarian or the institutional consultant at VSL

Legislation should be modified so that SNUAB members are appointed by the governor from a list of candidates nominated by the professional library associations in Virginia (VLA, VSLA, VEMA, etc.). Each member of the Board should be appointed for a three-year term with one third of the Board rotating off each year.

The SNUAB, or a subcommittee, should meet jointly with the executive committees or designated representatives of the various professional organizations/groups in the state to develop strategies for obtaining legislative support and funding for implementation of the recommendations made in this report for network development and implementation.

In the future, a joint meeting with representatives of these organizations/groups should be convened to develop appropriate mechanisms for obtaining regular feedback on network policies, services and operations from the respective membership/interest groups.

The SNUAB should continue to meet regularly at appropriate intervals determined by its members. Minutes of these meetings should be distributed to the State Librarian, the Library Coordinator of the CHE, the Supervisor of School Libraries and Information Technology, a desig- nated administrator at the Community College System, the president and/or designated representative of the respective professional organizations/groups in Virginia and to the designated regional networking representatives. When necessary, these various representa- tives should prepare written comments on their concerns regarding any recommendations made by the SNUAB and should submit these documents to the SNUAB Secretary for future discussion and action by the SNUAB.

7. The new Network Division of VSL should have the primary responsibility in the Commonwealth for the coordination of library automation and networking activities, provision of advice and consulting to support such activities, the design and offering of needed education and training programs for all levels of library personnel, and development of other programs as necessary.

   In particular, the new networking organization should be responsible for ensuring:

   - The development and adoption of standards for library automation and network participation in the areas of:
     - bibliographic databases and holdings statements
     - automated systems
     - telecommunications
     - interlibrary loan protocols and procedures
     - electronic mail
     - electronic document delivery
     - reporting statistics, automation costs, and other library management information

- The coordination of the maintenance, expansion, and provision of access to the Virginia database, including specifically:
  - continued maintenance of the database, with an increased number of libraries performing online maintenance;
  - expansion of the database to include the book and non-book holdings of additional libraries whose machine-readable records are currently available in MARC format, or which could be converted to MARC format; libraries with special or unique collections should be (converted and) included in the database as soon as possible; the holdings of remaining collections should be converted and included in the state database over the planning period;
  - expansion of the database to include the serial titles and holdings information, included in the Tidewater Union List of Serials, in the UVA-VPI serials conversion project and in similar union list projects;
  - enhancement of the location symbols in the database to include regional designators;
  - immediate provision of online access to the database to an increased number of libraries, beginning with libraries represented in the database;
  - distribution of CAVALIR on microfiche with replacement by a laser disk version as soon as possible, with more frequent distribution of updates;
  - provision of an interlibrary loan requesting capability on the system supporting the database so that libraries which are online can place requests at the time of the search;
  - use of the database as much as possible to support ongoing retrospective conversion projects;
  - assessment of the feasibility of phasing out the centrally-stored Virginia database and providing access to statewide holdings data in a distributed network as more libraries become automated and interfaces betweeen systems become available.
- The provision, as soon as possible, of a unified communications/electronic mail network for libraries across the Commonwealth, to support interlibrary loan requesting, calendar of events, and other messaging as necessary.
- The development of standard charges for various types and levels of network service.
- The coordination, monitoring and evaluation of statewide interlibrary loan activities, and the development of a compensation plan for net lenders to in-state libraries. Libraries which are compensated should not charge for loans and should provide service

within established standard turnaround times. This activity should be closely associated with the development of protocols and procedures for interlibrary loan.

- The statewide coordination of regionally-developed interlibrary delivery systems with identification of switching points between regional systems.

- The serious consideration of telefacsimile transmission for delivery of interlibrary loan requests for photocopies; at a minimum, transceivers should be located at each library contributing to the database and at regional or other nodes in the network.

- The coordination of acquisition of telefacsimile transceivers by libraries in Virginia so that all equipment purchased is compatible.

- The investigation of various commercial document delivery services for provision of requests for copies of journal articles; these costs should be compared with costs associated with in-house processing of requests using telefacsimile.

- The design and development of a variety of statewide, regional, and type-of-library database products, available in a variety of formats, covering serial, audiovisual, reference, and special collection holdings.

- The coordinated development of a cooperative collection development policy for Virginia libraries. This activity should be closely associated with the development of regional repositories.

- The coordination and support for the design and development of regional respository programs for infrequently-used materials.

- The provision of services related to the preservation and conservation of materials, either through a contract with one of the multi-state regional services on the East Coast, or through the establishment of a center for preservation and conservation in Virginia.

- The design and development of appropriate continuing education and training programs for all levels of library personnel, with some form of credentialing for participants. These programs should be provided statewide and should be coordinated with the activities of the Title III Continuing Education Committee.

- The provision of consulting services to libraries in the Commonwealth in the areas of:

    - automation
    - retrospective conversion
    - telecommunications
    - preservation and conservation.

- The investigation of various volume discounts for equipment, materials, online database services, document delivery services, etc.

- The development and coordination of shared regional (or sub-regional) automated systems to support the automation needs of libraries of al types and sizes within the state, as required. Many different systems could be used, but the following are preferable as they are aleady in use in one or more libraries in the state (CLSI, DataPhase, DRA, Dynix, Geac, LAMBDA, LS/2000, NOTIS, VTLS).

- The adoption of nationally- or vendor-developed transparent interfaces to link dissimilar automated library systems to form distributed networks.

- The investigation of methods for providing network support monies directly to participating libraries, rather than to the institutions to which they belong, since monies often dissipate into general overhead categories or other institutional projects.

8. Until the proposed Department of Information Technology (DIT) statewide communications network is in place and the Virginia library network organization becomes operational, ALANET should be used to provide immediate improvement in communications among all types of libraries in the Commonwealth.

   ALANET should be used for interlibrary communications among all public, academic and special libraries and school divisions because of this communications network's distinct advantages. The school divisions will act as access points to other types of libraries on behalf of school libraries, via ALANET. School libraries should investigate the potential use of VNET to support interlibrary communication.

   When the DIT network becomes operational, investigation should be made of the cost-effectiveness of use of that network as compared with continued use of ALANET and, if appropriate, VNET.

   The development of shared regional automated systems should be encouraged. Such systems can handle entire regions or sub-regions but should allow all types of libraries to take advantage of automation. Note that these developments are not bound by existing regional designations.

9. When the network is fully established and operational, it should become a totally self-supporting independent corporation. Initially the network should receive "seed" money to establish itself as a viable organization, but revenues should be generated from provision of services beyond the basic level. Service charges should be competitive with charges for similar services provided by other organizations.

   When the network is able to support itself, the feasibility of spinning it off as an independent not-for-profit organization should be examined.

10. Network participants should have formal contracts with the network organizations (both state and regional) for provision of network services.

11. All libraries in the Commonwealth (public, academic, institutional, school, special) should be eligible for membership in the statewide network. A basic annual membership fee (approximately $75) should be charged to all network members in return for basic network services:

    - Information about networking activities, automation developments, telecommunications developments, education and training offerings, calendar of events, etc.;
    - Free copies of CAVALIR issued at least 3 times per year;
    - Advice and consultation relating to automation, retrospective conversion, telecommunications, and preservation and conservation;
    - Mailbox on ALANET for interlibrary communications of all types, including ILL requesting.

    In addition to basic network membership, a range of membership categories should be developed reflecting different levels of participation in network services and activities:

    - Regional nodes - full participants with in-house or shared MARC-based automated library systems, who will provide certain services within their respective regions so non-automated libraries can access automated network services; eligible for compensation for services provided;

- Full participation in all automated activities as a contributor to the Virginia database and a supplier of interlibrary loans; eligible for interlibrary loan compensation;
- Partial participation in automated activities as a non-contributor to the database, but accessing the database using either a microcomputer or terminal, and having direct access to the electronic mail/communications network;
- Non-automated participation - receiving CAVALIR on fiche, and communicating requests by mail or telephone to designated regional nodes.

12. For school libraries, membership in the network organization is recommended for all school divisions, so that they may represent their school libraries and support their needs at the division level or through a designated school network node or nodes (e.g., a large secondary school with advanced level instruction). The information needs of many school libraries are expected to be met through inter- and intra-division communications on VNET. If VNET is not made available to school libraries, individual libraries should consider the use of ALANET or the DIT network as appropriate.

    Each school division should develop a database of learning resources available within the division; teaching kits and instructional materials are of particular importance for inclusion.

13. The basic configuration of the network should be a series of interconnected nodes. The predominant type of node should be regional multitype groups of libraries. However, other nodes such as multi-branch libraries in an area, or institutions with multiple libraries, or single libraries, etc. should also be able to participate. The network should be flexible enough to incorporate this variety of different sub-network configurations, so that existing systems and networks can be incorporated into the structure and new configurations can evolve in a variety of ways.

14. The development of regional consortia and expansion of existing consortia should be actively encouraged by the network organization. The regions should:

- Establish a governance structure and appropriate committees to work on planning, development, and implementation of networking objectives.
- Solicit interest in, and commitment of, libraries of all types within a region to share resources;
- Establish and design procedures and protocols for intraregional sharing of resources and facilities, and procedures for switching from intraregional activities to inter-regional activities;
- Design interlibrary loan procedures and protocols so that the burden is shared by all participating libraries;
- Build regional MARC databases of holdings of all types of materials for input to the Virginia database; in the future, these databases should become primary nodes when the Virginia database is stored in a distributed manner;
- Develop regional directories of expertise, services, and special collections;
- Develop regional delivery services which connect with other regional delivery services in the state;
- Identify potential sites for regional repositories, either within existing library facilities or in commercial warehouse space. Also determine what and how much material needs to be stored, how the materials should be filed/stored, who owns the stored materials, and what costs may need to be reimbursed for use of common storage facilities.
- Investigate and implement shared automated systems to support circulation control, online public access catalogs, serials control and acquisitions.
- Continue to seek sources of funding for development of multitype library networks.

15. Administrators of parent institutions should be kept informed of networking plans so that they will have adequate opportunity to prepare for active participation in various networking activities as they are implemented.

16. The entire process of reporting library statistics should be reviewed, because of inconsistencies noted in reporting practices as evidenced in the survey responses. Evaluation of the benefits and effectiveness of network services will be based on library statistics, pre- and post-networking, so it is important to establish a common basis for reporting.

17. The following automation guidelines should be adopted in order to ensure that systems/equipment acquired by Virginia libraries will be compatible with network development, so that these libraries may become active network participants.

Guidelines for Terminals/Microcomputers

- All microcomputers and terminals acquired should be capable of supporting ASCII code.
- All microcomputers and terminals should be capable of supporting the RS 232C communications protocol.
- Microcomputers should preferably be IBM-compatible.
- Libraries should request guidelines for purchasing laser disk players from the Network Division of VSL.

Guidelines for Integrated Library Systems

- Libraries considering local automation should purchase systems supporting the full MARC format if they are to become full participants in the network.
- Libraries not supporting full-MARC should include standard bibliographic identifiers in their machine-readable records (LC number or ISBN, etc.) so that their records could be upgraded later.
- Libraries should acquire systems that are capable of outputting MARC formatted records.
- Libraries should acquire systems that use standard operating systems.
- Libraries preferably should purchase automated library systems that already are in use in Virginia libraries.

SECTION 4

LIBRARY AUTOMATION AND NETWORK DEVELOPMENT PLAN FOR THE COMMONWEALTH OF VIRGINIA

4.1 Statement of Purpose

The purpose of this plan for library automation and network development in Virginia is the provision of a coordinated, but flexible, approach to library automation and networking on a statewide basis so that:

- citizens of the Commonwealth can have easy and rapid access to the total library and information resources in Virginia;

- return on investment may be realized for the substantial amount of funds expended already by Virginia libraries to support library automation and networking; this return on investment will be fully achieved only by maximizing the use of existing machine-readable files and automated systems;

- benefits from existing automation and networking efforts by Virginia libraries may be optimized to ensure better levels of performance and effectiveness to patrons;

- newer information processing technologies (e.g., compact laser disks, electronic mail) may be made available to libraries on a statewide basis and associated volume purchase discounts may be realized;

- Virginia libraries as a group may become potential heavy-duty users of the statewide unified digital telecommunications system planned by the Department of Information Technology (DIT);

- libraries in Virginia may maintain their autonomy, as well as reap the benefits of increased cooperation and sharing of resources.

4.2 Legal Structure and Goverance of the Network

The legal structure of the proposed Virginia library network organization is based on existing legislation (Code of Virginia, Section 42.1-32.1 through 32.7: Networking). This legislation gave the State Library Board the ultimate responsibility for networking activities and established a State Networking Users Advisory Council, now Board (SNUAB), for providing advice to the State Librarian and to the State Library Board on matters relating to networking. The establishment of the Virginia library network as a new division of the State Library will be proposed to the Legislature as the legal structure of the network organization. New funds and new positions will be required to operate the Network Division which will have primary responsibility for the statewide coordination of all activities related to library automation and networking.

The Virginia library network will be governed by the State Library Board, with the SNUAB and the State Librarian providing input and advice on the development of networking policies. The SNUAB will solicit input on networking issues from other libraries, as charged in the existing networking legislation. Note that an expanded SNUAB was recommended in item 6 on page 70 of this report.

4.3 Membership and Levels of Participation

All libraries in the Commonwealth (public, academic, institutional, school, special) will be eligible for membership in the statewide network. A basic annual membership fee (approximately $75) will be charged to all network members in return for basic network services:

- Information about networking activities, automation developments, telecommunications developments, education and training offerings, calendar of events, etc.;

- Free copies of CAVALIR issued at least 3 times per year;
- Advice and consultation relating to automation, retrospective conversion telecommunications, and preservation and conservation;
- Mail box on ALANET for interlibrary communications of all types, including ILL requesting.

In addition to basic network membership, a range of membership categories will be developed reflecting different levels of participation in network services and activities:

- Regional nodes - full participants with in-house or shared MARC-based automated library systems, who will provide certain services within their respective regions so non-automated libraries can access automated network services; eligible for compensation for services provided;
- Full participation in all automated activities as a contributor to the Virginia database and a supplier of interlibrary loans; eligible for interlibrary loan compensation;
- Partial participation in automated activities as a non-contributor to the database, but accessing the database using either a microcomputer or terminal, and having direct access to the electronic mail/communications network;
- Non-automated participation - receiving CAVALIR on fiche, and communicating requests by mail or telephone to designated regional nodes.

4.4 Network Services

The Virginia library network will offer the following services to member libraries:

- provision of a single communications and electronic mail system for all libraries in Virginia;
- continued maintenance of the Virginia database;
- expansion of the Virginia database to include the holdings of additional libraries;
- expansion of the Virginia database to include non-book holdings;

- enhancement of the location symbols in the database to include regional designators;
- provision of online access to the database to at least all libraries represented in the database;
- distribution of CAVALIR on microfiche with ultimate replacement by laser disk, and more frequent distribution of updates;
- provision of statewide, regional and type-of-library database products, e.g., relating to serials, audiovisuals, reference materials, special collections, etc.;
- provision of an interlibrary loan requesting capability on the system supporting the database so that libraries which are online can place requests at the time of the search;
- implementation of a compensation plan for net lenders to in-state libraries;
- coordination of regionally developed delivery systems;
- coordination of acquisition of telefacsimile transceivers by libraries in Virginia so that all equipment purchased is compatible;
- development of standards for network participation, including bibliographic standards, equipment standards, procedural standards, protocols, etc;
- development of a cooperative collection development policy for Virginia libraries;
- services related to the preservation and conservation of materials;
- consulting and advisory services in the areas of automation, retrospective conversion, telecommunications, and preservation and conservation;
- provision of education and training programs statewide;
- coordination and support for the design and development of regional respository programs;
- investigation of various volume discounts for equipment, materials, online database services, document delivery services, etc.
- monitoring and disseminating information about interfaces to link dissimilar automated library systems, and perhaps actual design and development of interfaces to link systems in Virginia libraries.

Each library in Virginia will determine the extent to which it will participate in network services and activities. Charges will be levied for service offerings beyond the basic level. Any service charges will be competitive with charges for similar services provided by other organizations. The network organization will endeavor to become totally self-supporting in the future when it becomes fully established and operational.

4.5 Implementation Activities

The implementation of the recommendations outlined in Section 3 of this report is clearly a long-term process. Although several of the activities are sequence dependent, many can be conducted simultaneously in keeping with our original intent of enabling libraries to progress with automation and networking at their own pace. We have organized the implementation activities into three groups as follows:

- activities to be conducted at the state or network level
- activities to be conducted at the regional or sub-network level
- activities to be conducted at the local level.

4.5.1 Activities to be Conducted at the State or Network Level

1. Distribute the long-range Library Automation and Network Development Plan and solicit feedback from libraries across the Commonwealth.
2. Convene network strategy meetings between the SNUAB, representatives of appropriate professional organizations, and designated state government library representatives.
3. Distribute minutes of the SNUAB meetings to the appropriate representatives of professional organizations, designated state government library representatives, and to the regional network representatives.
4. Prepare legislative changes necessary to establish a new division of the State Library as a Virginia Library Network Division.
5. Prepare legislative changes necessary to alter the makeup and selection of the SNUAB.

6. Lobby legislators as to the importance and value of library networking to Virginia.

7. Prepare proposals for the next legislative session for funding of the new State Library Division and the necessary staff positions.

8. Set up and convene committees to address issues related to:

   - bibliographic standards
   - automation standards
   - interlibrary loan protocols and procedures
   - interlibrary loan compensation
   - delivery systems
   - regional development
   - collection development
   - repository programs
   - conservation and preservation
   - education and training
   - identification and conversion of special collections
   - statistical and cost reporting standards
   - interfacing systems
   - evaluation of networking
   - liaison with professional organizations and interest groups

9. Hire and employ Network Division Director.

10. Hire and employ Network Division staff.

11. Continue to provide funds for retrospective conversion projects.

12. Continue maintenance of the Virginia database and distribution of CAVALIR.

13. Expand the database to include other libraries' machine-readable records which are available in MARC format or which could be converted to MARC format.

14. Expand the database to include additional serial titles and holdings statements available in machine-readable form.

15. School libraries develop and maintain a database of learning resources available within each division.

16. Provide online access to the database to an increasing number of libraries.

17. Prepare an RFP (or work order) and contract out the work for enhancement of the location symbols in the Virginia database to include regional designators.

18. Conduct a survey to identify libraries owning an IBM PC or compatible microcomputer.

19. Select a communications/electronic mail system for ILL request placement and other messaging.

20. Offer access to the communications/electronic mail system to all libraries having the necessary equipment.

21. Investigate volume discounts for equipment, materials, online database services, document delivery services, etc.

22. Coordinate acquisition of ALANET.

23. Investigate potential free use of VNET by school libraries.

24. Evaluate use of the DIT network versus use of ALANET and VNET for interlibrary communications.

25. Coordinate acquisition of telefacsimile transceivers to expedite transmission of interlibrary loan requests and photocopies.

26. Write a short networking column for the State Library newsletter.

27. Produce and disseminate more detailed network information for the network members.

28. Collect network membership fees.

29. Designate certain libraries as regional nodes and announce to membership.

30. Investigate alternative vendors for production of CAVALIR on laser disk.

31. Develop an RFP for production of CAVALIR on laser disk.

32. Prepare an RFP for network support services including:
    - maintenance of Virginia database
    - expansion of the Virginia database
    - online access to the Virginia database
    - production of CAVALIR and other products
    - ILL request placement and electronic mail

33. Determine charges for provision of network services.

34. Prepare and sign contracts with members for provision of network services.

35. Coordinate regional developments:

    - interlibrary loan
    - document delivery
    - repository programs
    - regional automation systems

36. Evaluate success of networking program.

37. Determine when the Virginia database can be stored in a de-centralized/distributed manner.

38. Assess feasibility of spinning off the network organization as a not-for-profit organization.

4.5.2 Activities to be Conducted at the Regional Level

1. Review the Network Plan.

2. Hold regional meetings to discuss the Network Plan.

3. Lobby legislative representatives and funding agencies as to the importance of networking to Virginia.

4. Automated libraries which contribute to the Virginia database discuss acting as regional nodes.

5. Solicit volunteers to serve as regional representatives.

6. Elect a regional networking governance group.

7. Appoint regional representatives to coordinate with the state-level network organization.

8. Set up and convene regional committees to review network-developed standards and programs.

9. Review and adopt protocols and standards for:

    - bibliographic data
    - interlibrary loan
    - automation.

10. Develop regional document delivery plan.

11. Identify special collections and resources in the region.
12. Develop regional automation plan.
13. Hire and employ automation coordinator.
14. Prepare RFP for development of a shared regional automation system.
15. Determine charges for provision of shared regional automation services.
16. Prepare and sign contracts with all libraries sharing systems and/or services.
17. Evaluate success of regional and statewide networking programs.
18. Share experiences gained from automation and networking with libraries in region that are not automated and/or do not participate in networking activities.

4.5.3 Activities to be Conducted at Local Level

1. Review Network Plan and discuss possibilities for implementation at the local level.
2. Lobby boards, trustees, legislative representatives, and funding agencies as to the importance of networking to Virginia libraries and library users.
3. Volunteer for participation in regional networking committees.
4. Purchase appropriate equipment and pay fees to access the communications/electronic mail system.
5. Use communications system/electronic mail to facilitate interlibrary communications.
6. Join the Virginia library network.
7. Select appropriate level of participation.
8. Determine whether library could act as a regional node.
9. If library is not automated, consider alternatives for automation:
    - purchase a MARC-based automated library system
    - share the purchase of a MARC-based automated library system with another library or libraries
    - become a user of a shared regional system.

10. Seek funding for retrospective conversion, as required.

11. Convert collection, as required.

12. Contribute holdings data for inclusion in the Virginia database.

13. Update holdings information in the Virginia database.

14. Pay appropriate fees for use of regional and state-level networking services.

15. Evaluate success of regional and statewide networking programs.

4.5.4 Schedule for Implementation

The following pages present a 15-year implementation schedule for automation and network development at the state or network level, at the regional level, and at the local level.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED
AT THE STATE OR NETWORK LEVEL: 1986 - 2001

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1. Distribute the long-range Library Automation and Network Development Plan and solicit feedback from libraries across the Commonwealth	x															
2. Convene network strategy meetings between the SNUAB, representatives of appropriate professional organizations, and designated state government library representatives	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
3. Distribute minutes of the SNUAB meetings to the appropriate representatives of professional organizations, designated state government library representatives, and to the regional network representatives	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
4. Prepare legislative changes necessary to establish a new division of the State Library as a Virginia Library Network Division	x															
5. Prepare legislative changes necessary to alter the makeup and selection of the SNUAB	x															
6. Lobby legislators as to the importance and value of library networking to Virginia	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
7. Prepare proposals for the next legislative session for funding of the new State Library Division and the necessary staff positions	x															

KEY:

——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE STATE OR NETWORK LEVEL: 1986 - 2001 (CONTINUED)

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
8. Set up and convene committees to address issues related to:	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
• bibliographic standards																
• automation standards																
• interlibrary loan protocols and procedures																
• interlibrary loan compensation																
• delivery systems																
• regional development																
• collection development																
• repository programs																
• conservation and preservation																
• education and training																
• identification and conversion of special collections																
• statistical and cost reporting standards																
• interfacing systems																
• evaluation of networking																
• liaison with professional organizations and interest groups																
9. Hire and employ Network Division Director			x	—	—	—	—	—	—	—	—	—	—	—	—	—
10. Hire and employ Network Division staff				x	—	—	—	x	—	—	—	—	x	—	—	—
11. Continue to provide funds for retrospective conversion projects	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12. Continue maintenance of the Virginia database and distribution of CAVALIR	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13. Expand the database to include other libraries' machine-readable records which are available in MARC format or which could be converted to MARC format	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

KEY: ——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE STATE OR NETWORK LEVEL: 1986 - 2001 (CONTINUED)

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
14. Expand the database to include additional serial titles and holdings statements available in machine-readable form	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15. School libraries develop and maintain a database of learning resources available within each division			—	—	—	—	—	—	—	—	—	—	—	—	—	—
16. Provide online access to the database to an increasing number of libraries	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
17. Prepare an RFP (or work order) and contract out the work for enhancement of the location symbols in the Virginia database to include regional designators	x															
18. Conduct a survey to identify libraries owning an IBM PC or compatible microcomputer	x															
19. Select a communications/electronic mail system for ILL request placement and other messaging	x															
20. Offer access to the communications/electronic mail system to all libraries having the necessary equipment	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
21. Investigate volume discounts for equipment, materials, online database services, document delivery services, etc.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22. Coordinate acquisition of ALANET	—	—	—													
23. Investigate potential free use of VNET by school libraries	x—	—	—													
24. Evaluate use of the DIT network versus use of ALANET and VNET for interlibrary communications		—	—													
25. Coordinate acquisition of telefacsimile transceivers to expedite transmission of interlibrary loan requests and photocopies			—	—	—	—	—	—	—	—	—	—	—	—	—	—
26. Write a short networking column for the State Library newsletter	—	—	—	—												
27. Produce and disseminate more detailed network information for the network members				—	—	—	—	—	—	—	—	—	—	—	—	—

KEY:

——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED
AT THE STATE OR NETWORK LEVEL: 1986 - 2001 (CONTINUED)

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
28. Collect network membership fees				x	x	x	x	x	x	x	x	x	x	x	x	x
29. Designate certain libraries as regional nodes and announce to membership				x												
30. Investigate alternative vendors for production of CAVALIR on laser disk	———	———														
31. Develop an RFP for production of CAVALIR on laser disk		x														
32. Prepare an RFP for network support services including:				———												
• maintenance of Virginia database																
• expansion of the Virginia database																
• online access to the Virginia database																
• production of CAVALIR and other products																
• ILL request placement and electronic mail																
33. Determine charges for provision of network services					x	x	x	x	x	x	x	x	x	x	x	x
34. Prepare and sign contracts with members for provision of network services					x	x	x	x	x	x	x	x	x	x	x	x
35. Coordinate regional developments:	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
• interlibrary loan																
• document delivery																
• repository programs																
• regional automation systems																
36. Evaluate success of networking program					x	x	x	x	x	x	x	x	x	x	x	x
37. Determine when the Virginia database can be stored in a de-centralized/distributed manner										———	———	———	———	———	———	———
38. Assess feasibility of spinning off the network organization as a not-for-profit organization															———	———

KEY:
——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE REGIONAL LEVEL: 1986 - 2001

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1. Review the Network Plan	x															
2. Hold regional meetings to discuss the Network Plan	——															
3. Lobby legislative representatives and funding agencies as to the importance of networking to Virginia	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
4. Automated libraries which contribute to the Virginia database discuss acting as regional nodes	——	——	——	——												
5. Solicit volunteers to serve as regional representatives	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
6. Elect a regional networking governance group	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x
7. Appoint regional representatives to coordinate with state-level network organization			x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
8. Set up and convene regional committees to review network-developed standards and programs			——	——	——	——	——	——	——	——	——	——	——	——	——	——
9. Review and adopt protocols and standards for: • bibliographic data • interlibrary loan • automation				——	——	——	——	——	——	——	——	——	——	——	——	——
10. Develop regional document delivery plan			——	——												
11. Identify special collections and resources in the region	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
12. Develop regional automation plan			——	——	——											
13. Hire and employ regional automation coordinator				x——	——	——	——	——	——	——	——	——	——	——	——	——
14. Prepare RFP for development of a shared regional automation system				——	——											

KEY:
——— = on-going activities; x——x = on-going a with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED
AT THE REGIONAL LEVEL: 1986 - 2001 (CONTINUED)

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
15. Determine charges for provision of shared regional automation services						x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
16. Prepare and sign contracts with all libraries sharing systems and/or services						x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
17. Evaluate success of regional and statewide networking programs					x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
18. Share experiences gained from automation and networking with libraries in region that are not automated and/or do not participate in networking activities	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———

KEY:
——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE LOCAL LEVEL: 1986 - 2001

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1. Review Network Plan and discuss possibilities for implementation at the local level	———	———														
2. Lobby boards, trustees, legislative representatives and funding agencies as to the importance of networking to Virginia libraries and library users	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
3. Volunteer for participation in regional networking committees	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
4. Purchase appropriate equipment and pay fees to access the communications/electronic mail system		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
5. Use communications system/electronic mail to facilitate interlibrary communications		———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
6. Join the Virginia library network				x	x	x	x	x	x	x	x	x	x	x	x	x
7. Select appropriate level of participation				x	x	x	x	x	x	x	x	x	x	x	x	x
8. Determine whether library could act as a regional node	———	———	———	———												
9. If library is not automated, consider alternatives: o purchase a MARC-based in-house automated library system o share the purchase of a MARC-based automated library system with another library or libraries o become a user of a shared regional system	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
10. Seek funding for retrospective conversion, as required	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
11. Convert collection, as required	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———

KEY:
——— = on-going activities; x———x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

IMPLEMENTATION SCHEDULE FOR ACTIVITIES TO BE CONDUCTED AT THE LOCAL LEVEL: 1986 - 2001 (CONTINUED)

IMPLEMENTATION ACTIVITIES	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
12. Contribute holdings data for inclusion in the Virginia database	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
13. Update holdings information in the Virginia database	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———	———
14. Pay appropriate fees for use of regional and state-level networking services				x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x - -	x
15. Evaluate success of regional and statewide networking programs					x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x——	x

KEY:
——— = on-going activities; x——x = on-going activities with milestones; x = discrete activities; x - - x = discrete activities which recur.

4.6 Projected Costs

Projected costs to perform the networking activities at the state or network level are displayed in Table 8. Details describing how the costs were derived are included in Appendix A of this report. Costs are included for the following implementation activities:

- Distribute the plan;
- Convene meetings;
- Employ a Network Director and Network Division staff;
- Continue retrospective conversion projects;
- Maintain/expand the Virginia database;
- Produce CAVALIR on laser disk;
- Add regional designators to holdings symbols in the Virginia database;
- Conduct a survey of PC use in Virginia libraries.

Other implementation activities will be conducted by the Network personnel and will not incur additional costs as explained in the assumptions accompanying Table 8.

TABLE 1

NETWORK COSTS
($ x 1,000)

Activities	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1) Distribute plan	8															
2) Convene meetings	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
9) Employ Director	-	-	58	61	63	66	69	72	76	79	83	86	90	94	98	103
10) Employ staff:																
a. Personnel	-	-	110	115	120	126	131	191	199	208	217	227	295	308	322	336
b. Other			40	5	5	5	5	19	5	5	5	5	19	5	5	5
11) Continue retrospective conversion	282	564	752	940	940	940	940	940	940	752	645	376	94	94	94	94
12-14 & 16) Maintain database	154	154	172	204	356	615	656	623	332	332	332	332	332	332	332	332
12) Produce CAVALIR on laser disk	45	53	60	75	90	105	120	135	150	165	172	180	180	180	180	187
17) Enhance location symbols	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18) Conduct PC survey	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	506	776	1,197	1,405	1,579	1,862	1,926	1,985	1,707	1,546	1,378	1,211	1,015	1,018	1,036	1,062

Network Costs - Assumptions
(Supplement to Table)

Activity:

1.

Production of 1500 copies of plan	$6,500
Mailing (1st or 3rd class)	1,350
	$7,850

Task of soliciting feedback involving hearings and travel is assumed to be already part of Library staff's activities so this would incur no additional costs.

2. Network Strategy Meetings: Assumes monthly meetings involving nine members @ $50 each to pay for travel to meetings and lunches. Costs each year = $5,400.

3-8.

Activities initiated and handled by existing State Library staff and later, by network staff (as needed), at no additional cost.

9. Employment of Network Director: Assumes base salary of $44,643 plus 30% for benefits, ($58,035) and increasing at a rate of 4.5% each year for merit. No adjustment for inflation included. Assumes date of hire is FY1988.

10. Employment of Staff: Assumes the hiring of a staff of four in FY1988 (two consultants, one administrative assistant/secretary, one typist), two more in FY1993 (a consultant and a typist), and two more in FY1998 (a consultant and an administrative assistant). Salaries for consultants, $25,581; administrative assistants, $18,309; and typists, $15,321. Salary costs are increased 30% (for benefits) and 4.5% each year for merit (but not inflation).

It is assumed also that each staff member would be provided with 100 square feet of office space at the State Library.

Furniture costs for each staff is assumed to be $2,000. Each would also be provided with an IBM PC, printer and software at a cost of $5,000 each.

Cost of operating the office is estimated to be $5,000 per year (telephone cost $2,500 and office supplies $2,500).

11. Continue Retrospective Conversion: Over the past two years, approximately 600,000 records have been added to the Virginia database through retrospective conversion projects at an average cost of $0.94 per record. This has involved the libraries mailing their shelf lists to the vendor and the vendor supplying the labor.

    Assumed here is that there are 15 million more titles to be added to the database and, over the next 15 years, 10 million of these will be added. Assumed also is that the volume of retrospective conversion activity will be the same in 1986 as for each of the last two years (300,000 records) and will increase each year and reach its highest level (1 million records each year) between 1989 through 1994. Activity would then level off as most projects will be completed. The assumed cost per record is $0.94.

12-14,16

Continue Maintenance of the Virginia Database: It is assumed that during the years, 1986-1987, the libraries that are currently contributing to the database would continue to do so. Assumed also is that, during the years 1988-1994 additional libraries will join the effort and in 1995, the network will consist of 500 member libraries. Therefore, maintenance of the database consists of the costs of adding records for newly acquired materials of the network members. It includes start-up costs, equipment, and recurring costs.

The associated costs of three vendors, the Computer Company (TCC), SOLINET/OCLC, and Auto-Graphics, Inc. were analyzed using the same assumptions. Given in this table are the costs for TCC which were the lowest. Details and calculations are provided in Appendix A.

12. Produce CAVALIR on Laser Disk: Costs are based on the projected number of records in the database, the number of copies distributed, and the frequency of production. See Appendix A for more details.

17. Preparation of RFP and contracting of work for enhancement of regional designators in the Virginia database: one-time cost, $10,000 (1986).

18. Conduct survey to identify libraries with IBM PC or compatible micro: one-time cost for survey, $2,000 (1986).

19-38.

Activities initiated and handled by existing State Library staff and, later, by network staff (as needed), at no additional cost.

REFERENCES

1. Carlile, Huntington. "The Diversity Among Legal Structures of Library Networks," pp. 187-210, in *Networks for Networkers: Critical Issues in Cooperative Library Development*, edited by B.E. Markuson and B. Woolls. New York, Neal-Schuman, 1980.

2. Stevens, Norman D. "An Historical Perspective on the Concept of Networks: Some Preliminary Considerations," pp. 29-48, in *Networks for Networkers: Critical Issues in Cooperative Library Development*, edited by B.E. Markuson and B. Woolls. New York, Neal-Schuman, 1980.

3. Montgomery, K. Leon and Dowlin, Edwin. "The Governance of Library Networks: Purposes and Expectations," Chapter 18, pp. 179-200 in *The Structure and Governance of Library Networks*, edited by A. Kent and T.J. Galvin. New York, Dekker, 1979.

4. Virginia. General Assembly. *Code of Virginia*, Section 42.1-32.1 through 32.7: "Networking." Richmond, February 1983.

5. Griffiths, Jose-Marie and King, Donald W. *Interlibrary Loan Compensation Plan for the Commonwealth of Pennsylvania*. Rockville, MD, King Research, April 1985.

BIBLIOGRAPHY

1. Barbour, Wendall A., et al. "Summary of Recommendations." Material prepared by a subcommittee of technical services librarians and submitted to the Chairman, Library Advisory Committee, State Council for Higher Education in Virginia. May 24, 1985.

2. The Computer Company. Integrated Library Network System for the Commonwealth of Virginia. Richmond, [1978].

3. DeGennaro, Richard, "Library Automation and Networking Perspectives on Three Decades." Library Journal, April 1, 1983. pp. 629-635.

4. Evans, Glyn T. "Networking in 1984." The Bowker Annual of Library and Book Trade Information. 30th edition. New York, Bowker, 1985.

5. Fullerton, Richard F., et al. Tidewater Library Network Study, Final Report. Allison Park, PA; Alexandria, VA, Synectics Corporation, 1978.

6. Griffiths, Jose-Marie and King, Donald W. Interlibrary Loan Compensation Plan for the Commonwealth of Pennsylvania. Rockville, MD, King Research, April 1985.

7. Information Systems Consultants, Inc. State and Commercial Bibliographic Activities and Their Effect on the Bibliographic Utilities. 1983.

8. Johnson, Richardia S., Vinod Chachra, Dean Burgess. Issue Papers Prepared for the Commission Studying a State Library Networking System. Richmond, 1982.

9. Kent, Allen and Galvin, Thomas J., editors. The Structure and Governance of Library Networks. New York, Dekker, 1979.

10. LeStourgeon, Martha, et al. "Impact of Networking on Academic Libraries." Material prepared by a subcommittee and submitted to the Chairman, Library Advisory Committee, State Council for Higher Education in Virginia. June 4, 1985.

11. Markuson, Barbara Evans and Woolls, Blanche, editors. Networks for Networkers: Critical Issues in Cooperative Library Development. New York, Neal-Schuman, 1980.

12. National Commission on Libraries and Information Science. Toward a National Program for Library and Information Services: Goals for Action. Washington, GPO, 1975.

13. "Networking Concerns." Virginia Chapter, Special Libraries Association. [Richmond, 1985].

14. "Networks in Education." Education Libraries, Volume 7, Numbers 1-2. Spring-Summer, 1982. pp. 3-38.

15. Ober, Constance E. An Overview of Satellite Technology and Costs. Virginia Department of Information Technology. May 1985.

16. Ober, Constance E. Virginia Telecommunications Systems for Administrative Uses and Educational Delivery. Virginia Department of Information Technology. May 1985.

17. Rogers, JoAnn V. "Networking: Selected Research Studies, 1979-83." Library and Information Science Research, Volume 6, Number 2. April-June 1984. pp. 111-133.

18. Council of Higher Education in Virginia, Library Advisory Committee. "Recommendations for Consultant." Richmond, March 1984.

19. Council of Higher Education in Virginia, Library Advisory Committee. Virginia Plan for Academic Library Cooperation. Richmond, 1977; revised 1983.

20. State Networking Users Advisory Council. Principles and Goals for a Virginia Library Network. Richmond, March 1984.

21. Task Force on the Role of the School Library Media Program in the National Program. The Role of the School Library Media Program in Networking. Washington, DC, National Commission on Libraries and Information Science, 1978.

22. Trezza, Alphonse F. "Networks." ALA Yearbook of Library and Information Services; a Review of Library Events in 1983. Volume 9. Chicago, American Library Association, 1984, pp. 215-217.

23. Turock, Betty J. "Organization Factors in Multitype Library Networking." Library and Information Science Research, Volume 6, Number 4. October-December, 1984. pp. 349-381.

24. Virginia. General Assembly. Code of Virginia, Section 42.1-32.1 through 32.7: "Networking." Richmond, February 1983.

25. Virginia. General Assembly. House of Delegates. House Bill No. 430. Richmond, 1983.

26. Virginia. General Assembly. House of Delegates. House Joint Resolution No. 239. Richmond, 1981.

27. Virginia State Library. Governor's Economic Development Project-Proposal for a Statewide Library Network. Richmond, [1983].

28. Virginia State Library. Library Automation in Virginia, Proceedings of the Meeting of the Statewide Discussion Group. Richmond, 1980.

29. Virginia State Library. An Overview of Library Networking in Virginia. Richmond, 1981.

30. Virginia State Library. An Overview of Library Networking in Virginia, 1981-82 Supplement. Richmond, 1982; revised 1985.

31. Virginia State Library. Statistics of Virginia Public Libraries and Institutional Libraries, 1982-83. Richmond, 1984.

APPENDIX A

COST ANALYSIS

TABLE OF CONTENTS

PAGE

PREFACE A-ii

A.1 Costs of Maintaining/Expanding the Virginia Database A-1

Tables A1, 1.1, 1.2 TCC Costs A-2

Tables A2, 2.1, 2.2 Solinet Costs A-5

Tables A3, 3.1 Auto-Graphics Costs A-8

A.2 Costs of Shared, Regional Automated Systems A-10

A2.1 Notes on Cost Components A-11

Table A4 Basic Statistics for Configuring Regional Systems A-17

Table A5 Summary Costs for Shared Regional Systems to Support ILL and Circulation A-18

Table A6 Summary Costs for Upgrading Shared Regional Systems to Support Online Public Access Catalogs A-19

Tables A7-12 Detailed Costs of Shared Regional Systems Supporting ILL and Circulation A-20

Table A13 Detailed Personnel Costs for Shared Regional Systems Supporting ILL and Circulation A-26

Tables A14.1-14.6 Detailed Computer Equipment, Communications Equipment and Telecommnications Costs for Shared Regional Systems Supporting ILL and Circulation A-27

Table A15 Other Detailed Costs Associated with Shared Regional Systems Supporting ILL and Circulation A-33

Tables A16-21 Detailed Costs of Upgrading Shared Regional Systems to Support Online Public Access Catalogs A-35

A3. Costs of Producing and Reproducing CAVALIR on CD-ROM A-41

Table A22 Costs of CD-ROM Production A-42

Table A23 Projected Costs to Produce CAVALIR on CD-ROM A-43

Table A24 List of CD-ROM Suppliers A-44

A4. Costs of Using ALANET A-45

Table A25 Costs to use ALANET A-46

PERFACE

For purposes of costing, libraries were divided into groups according to size. The following assumptions were made and applied to the cost estimates supplied by various vendors:

- The number of libraries included was 500 libraries (all libraries in the state except the individual school libraries)
- The number of libraries in each size group was assumed to be:

  Size A (less than 10,000 items) — 100 libraries, of which 3 are already online to OCLC/SOLINET or TCC.

  Size B (10,000-99,999 items) — 248 libraries, of which 29 are already online to OCLC/SOLINET or TCC.

  Size C (100,000-500,000 items) — 111 libraries, of which 38 are already online to OCLC/SOLINET or TCC.

  Size D (over 500,000 items) — 41 libraries, of which 18 are already online to OCLC/SOLINET or TCC.

- Over the 15-year planning period, all 500 libraries will come online to the network. Currently 88 libraries are online, including 60 libraries already online to OCLC. It was assumed that the remaining 412 libraries will be brought online in decreasing order of size according to the following schedule:

  1988 — 12 Size D libraries
  1989 — 11 Size D libraries
  1990 — 37 Size C libraries
  1991 — 36 Size C libraries
  1992 — 110 Size B libraries
  1993 — 109 Size B libraries
  1994 — 97 Size A libraries

A1. Costs of Maintaining/Expanding the Virginia Database

TABLE A1

TCC - DATABASE MAINTENANCE COSTS
($ x 1,000)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
Adding new records	17	17	22	27	33	39	45	51	54	54	54	54	54	54	54	54	683
Telecommunication	87	87	115	142	175	207	241	276	278	278	278	278	278	278	278	278	3,554
Equipment	50	50	35	35	110	110	329	329	291	-	-	-	-	-	-	-	1,339
TOTAL	154	154	172	204	318	356	615	656	623	332	332	332	332	332	332	332	5,576

NOTES:

Year	Assumptions	Costs to Add Records	Telecommunications Costs	Equipment Costs
1986	Number of libraries online remains the same (88) and $50,000 is expanded to upgrade equipment to pc with modems.	$ 16,521	$ 86,651	$ 50,000
1987	Same as above.	$ 16,521	$ 86,651	$ 50,000
1988	Half of libraries of size level "D" come online. Each purchases pc with modem @ $3,000.	$10,380 x .5 = $ 5,190 added	$55,729 x .5 = $ 27,865 added	$ 34,500
1989	Other half of size level "D" come online.	$ 5,190 added	$ 27,865 added	$ 34,500
1990	Half of libraries of size level "C" come online.	$12,272 x .5 = $ 6,136 added	$64,605 x .5 = $ 32,303 added	$109,500
1991	Other half of size level "C" come online.	$ 6,136 added	$ 32,303 added	$109,500
1992	Half of libraries of size level "B" come online.	$12,258 x .5 = $ 6,129 added	$68,547 x .5 = $ 34,274 added	$328,500
1993	Other half of size level "B" come online.	$ 6,129 added	$ 34,274 added	$328,500
1994	Libraries of size level "A" come online.	$ 2,629 added	$ 2,639 added	$291,000
1995-2001	500 libraries online.	TOTAL = $ 54,070/year	TOTAL = $278,174/year	

Details provided in Tables A1.1 and A1.2.

TABLE A1.1

TCC — MAINTENANCE OF DB — ADDING NEW RECORDS

1 Libraries Classified by Collection Size (volumes/items)	2 Number in Each Category	3 Number of Titles Added Each Year (Each Library)	4 Number of Libraries Currently Online	5 Number of Libraries to Bring Online	6 Cost to Add Record (Not Original Cataloging) ($)	7 Proportion Not Originally Cataloged (%)	8 Total Costs to Add Titles for Libraries Currently Online (3x4x6x7) ($)	9 Total Costs to Add Titles for Remaining Libraries (3x5x6x7) ($)
A) Under 10,000	100	762	3	97	.051	70	82	2,639
B) 10,000 - 99,999	248	2,172	29	219	.044	70	1,040	12,258
C) 100,000 - 500,000	111	6,151	38	73	.039	70	6,381	12,272
D) Over 500,000	41	16,521	18	23	.039	70	8,118	10,380
TOTAL	500		88	412			16,521	37,549

TABLE A1.2

TCC — TELECOMMUNICATIONS COSTS

1 Libraries Classified by Collection Size (volumes/items)		2 Average Number of Titles Added Each Year	3 Average Number of Titles Not Originally Cataloged (70%)	4 Hours of Connect Time Required @ 1.5 Minutes Each	5 Number of Titles Originally Cataloged (30%)	6 Hours of Connect Time Required @ 8 Minutes Each	7 Total Connect Time Required (4+6) (mins)	8 Telecommunication Costs @ $2.50/hr. (Each Library)	9 Number of Libraries Online (Each Category)	10 Current Total Communication Costs (8x9)	11 Number of Libraries to Bring Online	12 Total Telecommunication Costs of Libraries to be Brought Online (8x11)
A)	Under 10,000	762	533	13	229	31	44	110	3	330	97	10,670
B)	10,000 - 99,999	2,172	1,520	38	652	87	125	313	29	9,077	219	68,547
C)	100,000 - 500,000	6,151	4,306	108	1,845	246	354	885	38	33,630	73	64,605
D)	Over 500,000	16,521	11,565	289	4,956	661	950	2,423	18	43,614	23	55,729
TOTAL									88	87	-	199,551

TABLE A2

SOLINET — DATABASE MAINTENANCE COSTS
($ x 1,000)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total
Start-up	1	-	204	204	122	78	78	68	-	-	-	-	-	-	-	-	755
Service charges	49	49	154	248	1,776	1,294	1,341	1,387	1,427	1,427	1,427	1,427	1,427	1,427	1,427	1,427	17,724
Equipment	50	50	41	41	123	123	346	346	300	-	-	-	-	-	-	-	1,420
TOTAL	100	99	399	503	2,021	1,495	1,765	1,801	1,727	1,427	1,427	1,427	1,427	1,427	1,427	1,427	19,899

NOTES:

Year	Assumptions	Start-up Costs	Service Charges	Equipment Costs
1986	Number of libraries online remains the same (60 current OCLC members become network associate members). $50,000 expended to upgrade equipment to PC's with modem.	$18 x 60 = $ 1,080	$817 x 60 = $ 49,020	$ 50,000
1987	Number of libraries online remains the same. $50,000 expended to upgrade equipment to PC's with modem.	No additional costs	$ 49,020	$ 50,000
1988	Half of libraries of size "D" join network - As associate members. Each purchases PC with modem @ $3,000.	$15,148 x 27 x .5 = $ 204,498	$7,753 x 27 x .5 = $ 104,666 added	$ 40,500
1989	Other half of size "D" join network - As associate Each purchases PC with modem.	$ 204,498	$ 104,666 added	$ 40,500
1990	Half of libraries of size "C" join network - As associate or selective members. Each purchases PC with modem.	($15,148 x 13 x .5) + $679 x 69 x .5) = $ 121,888	$7,753 x 13 x .5) + ($403 x 69 x .5) = $ 517,849 added	$123,000
1991	Other half of size "C" join network - As associate or selective members. Each purchases PC with modem.	$ 121,888	$ 517,849 added	$123,000
1992	Half of libraries of size "B" join network - As selective members. Each purchases PC with modem.	$679 x 231 x .5 = $ 78,425	$403 x 231 x .5 = $ 46,547 added	$346,500
1993	Other half of size "B" join network - As selective members. Each purchases PC with modem.	$ 78,425	$ 46,547 added	$346,500
1994	Libraries of size level "A" join network - As selective members. Each purchases PC with modem.	$679 x 100 = $ 67,900	$403 x 100 = $ 40,300 added	$300,000
1995-2001	500 Libraries in network.	No additional costs	TOTAL = $1,427,444	No additional costs

Details provided in Table A2.1 and A2.2.

TABLE A2.1

COST SUMMARY AVERAGES FOR INDIVIDUAL INSTITUTIONS USING SOLINET-OCLC STATE DATABASE SERVICES

	Full Member[1] (Current OCLC Members) ($)	Associate Member[2] (Leased Line) ($)	Selective User[3] ($)
STARTUP COSTS			
1. SOLINET Member Fees	-	1,000	-
2. Cataloging	-	-	-
3. Tape Loading (50k titles assumed)	-	10,000	-
4. Group Access & ILL (Profiling & training)	18	18	79
5. Communications (Terminal & line installation)	-	4,130	-
STARTUP TOTALS ($)	18	15,148	79
SERVICE CHARGES (Annual)			
1. SOLINET Dues	-	300	-
2. Cataloging	-	-	-
3. Tape Loading (3k titles assumed)	-	2,040	-
4. Group Access & ILL	817	817	530
5. Communications	-	4,596	403
ONGOING TOTALS ($)	817	7,753	933

[1] OCLC members have access to OCLC using all current capabilities. They may perform searches of the state database holdings and place ILL requests online.

[2] Associate members, also called tapeloading libraries, have access to OCLC using all current capabilities. They may perform searches on the state database holdings and place ILL requests online. Their cataloging data are entered annually into the system in batch mode from MARC-compatible tapes supplied by the respective libraries.

[3] Selective users may freely search the state database, but their cataloging data are not added to the database. They have access to abbreviated bibliographic records in OCLC and in the state database, but do not view holdings information for items held outside the state. ILL requests may be placed online for materials located in the state database, but another library must be used to process requests for materials in OCLC which are held out of state.

TABLE A2.2

SOLINET-OCLC DATABASE MAINTENANCE

1 Libraries Classified by Collection Size (volumes/items)	2 Current OCLC Members	3 Associate Members to Add	4 Selective Members to Add	5 Total
A) Under 10,000	0	0	100	100
B) 10,000 - 99,999	17	0	231	248
C) 100,000 - 500,000	29	13	69	111
D) Over 500,000	14	27	0	41
TOTAL	60	40	400	500

6 Costs For Each Library	7 Current OCLC Members ($)	8 Associate Members to Add ($)	9 Selective Members to Add ($)
Start-Up	18	15,148	679
Annual	817	7,753	3,523

TABLE A3

AUTO-GRAPHICS — DATABASE MAINTENANCE COSTS
($ x 1,000)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
Start-up	24	24	7	7	20	20	59	59	52	-	-	-	-	-	-	-	272
Service charges	606	606	696	786	1,070	1,355	1,968	2,581	2,810	2,810	2,810	2,810	2,810	2,810	2,810	2,810	32,148
Equipment	50	50	35	35	110	110	328	328	291	-	-	-	-	-	-	-	1,237
TOTAL	680	680	738	828	1,200	1,485	2,355	2,968	3,153	2,810	2,810	2,810	2,810	2,810	2,810	2,810	33,657

NOTES:

Year	Assumptions	Start-up		Service Charges	Equipment Costs
1986	Number of libraries online remains the same (88). Start-up costs (including two days of training in each of the six regions) is expended over two years. $100,000 is expended to upgrade equipment to PC's with modems over two years.	($525 x 88) + ($200 x 12) x .5 =	$ 24,300	$606,280	$ 50,000
1987	See assumption above.		$ 24,300	$ 606,280	$ 50,000
1988	Half of libraries of size level "D" come online. (Start-up costs include six training days.) Each purchases pc with modem @ $3,000 each.	($12,075 x .5) + ($200 x 6) =	$ 7,238	$179,400 x .5 = $ 89,700 added	$ 34,500
1989	Other half of size level "D" come online.		$ 7,238	$ 89,700 added	$ 34,500
1990	Half of libraries of size level "C" come online.	($38,325 x .5) + ($200 x 6) =	$ 19,863	$569,400 x .5 = $ 284,700 added	$109,500
1991	Other half of size level "C" come online.		$ 19,863	$ 284,700 added	$109,500
1992	Half of libraries of size level "B" come online.	($114,975 x .5) + ($200 x 6) =	$ 58,688	$1,226,400 x .5 = $6,613,200 added	$328,500
1993	Other half of size level "B" come online.		$ 58,688	$ 513,200 added	$328,500
1994	Libraries of size level "A" come online.	$50,925 + ($200 x 6) =	$ 52,125	$ 228,920 added	$291,000
1995-2001	500 libraries online.			TOTAL = $2,810,400	

Details provided in Table A3.1.

TABLE A3.1

AUTO-GRAPHICS, INC. - DATABASE MAINTENANCE COSTS

Start-up

Each site:	
Installation	$ 400
Telephone connect move	$ 100
User documentation (first copy)	-
Cables	$ 25
Subtotal	$ 525
Training (per day)	$ 200

*Service charges (each site) (Annual)	Full Service (Leased Line)	Limited Service (Dial-Up)
User I.D. fee	$ 600	$600
System usage fee	$ 7,200	$40/hour
Total	$ 7,800	see below - Column 6

Equipment

IBM PC or compatible	$ 3,000

---

*Subject access available for $1,200 per year (per library). Cost of 100 libraries having this capability would be $120,000 per year. This has not been included in calculations.

1 Libraries Classified by Collection Size (volumes/items)	2 Number of Titles Not Originally Cataloged (70%)	3 Hours of Connect @ 1.5 Minutes Each	4 Number of Titles Originally Cataloged (30%)	5 Hours of Connect Time Required @ 8 Minutes Each	6 Service Charge for Full Service @ $40/hr. ($)	7 Annual Fees (Each Library) ($)	8 Total Fees (Each Library) ($)	9 Number of Libraries Online	10 Total Costs to Add Titles for Libraries Currently Online (8x9) ($)	11 Number of Libraries to Bring Online	12 Total Costs to Add Titles for Remaining Libraries (8x11) ($)	13 Start-up Costs for Remaining Libraries @ $525 ea. ($)
A) Under 10,000	533	13	229	44	1,760	600	2,360	3	7,080	97	228,920	50,925
B) 10,00 - 99,999	1,520	38	652	125	5,000	600	5,600	29	162,400	219	1,226,400	114,975
C) 100,000 - 500,000	4,306	108	1,845	N/A	N/A	7,800	7,800	38	296,400	73	569,400	38,325
D) Over 500,000	11,565	289	4,956	N/A	N/A	7,800	7,800	18	140,400	23	179,400	12,075
TOTAL								88	606,280	412	2,204,120	216,300

A2. Costs of Shared, Regional Automated Systems

637

A2.1 NOTES ON COST COMPONENTS

1. PERSONNEL COSTS

1.1 Direct Salaries

Salaries for manager of Computer Operations and Lead Computer Operator are based on salary averages quoted in "Annual DP Salary Survey", *Datamation*, September 15, 1984. Positions in centralized system are quoted at salary rate for installations of over $1 million value.

1.2 Employee Benefits

Benefits are estimated at 31 percent of direct salary, including vacation, sick leave, medical and dental insurance, unemployment insurance, disability compensation, and indirect costs related to salaries/benefits.

2. COMPUTER EQUIPMENT

2.1 Central Processing Unit, All Cabinets and Cabling

Vendor estimate for CPU with 12 Mbytes main memory, supporting a maximum of 512 ports, with 98 ports included.

2.2 Memory Components

Vendor estimate for add-on memory units (2 Mbytes) appropriate for large systems.

2.3 Operator Console Unit

Vendor estimate for hard copy terminal console associated with CPU's quoted in (2.1) above.

2.4 Magnetic Tape Drive System

Vendor estimate for tape drive system, 1600 bytes per inch (bpi), suitable for use with systems quoted in 2.1.

2.5 Disk Storage System

Vendor estimate for each 3-disk unit, including cabinet and controllers, at 456 Mbytes of storage per disk (1368 Mbytes of storage per 3-disk unit). Each unit controller can support four disks, each cabinet holds three disks. Space is available in cabinet of tape drive system cabinet for one disk.

2.6 Printers

Vendor estimate for a 230 line per minute (lpm) band printer.

2.7 Terminals, Wands and Local Printers

Terminals — vendor estimate for a terminal unit including keyboard and monitor (CRT).

Microcomputer — vendor estimate for a microcomputer unit with keyboard, monitor (CRT), 256 K memory, and dual floppy disk drive.

Wands — vendor estimate for a barcode readers appropriate for use with terminals and microcomputers.

Local printer — vendor estimate for a dot matrix printer.

2.8 Microcomputer Back-up System

Microcomputer quoted in 2.7 serves as circulation terminal and circulation back-up.

2.9 Other

Vendor estimate for cables for peripherals.

3. COMMUNICATION COSTS

3.1 Modems

See 3.2 below.

3.2 Multiplexors/Concentrators

Vendor estimate for statistical multiplexors with 9600 baud modems for high speed communications. Configured at 1 channel per terminal. Average cost is given for range of multiplexors handling 4-16 channels.

3.3 Port Expansions

Vendor estimates for sixteen-port expansion units.

4. OTHER EQUIPMENT

4.1 Forms Burster

Price as listed in vendor catalog.

4.2 Back-Up Power System

Vendor estimate for sufficient power supply to sustain system operations until proper shutdown in the event of power failure.

5. SOFTWARE COSTS

Vendor estimates.

6. TELECOMMUNICATIONS

Vendor estimates for point-to-point circuits from each library to CPU with multi-drop line within the library or library system.

7. TRAINING

Vendor estimates.

8. AUTOMATED SYSTEM STAFFING SUPPORT

8.1 Office Space

Costs for local average space rental in the Southeast.

8.2 Furniture

Costs based on list prices in vendor catalogs.

8.3 Telephone

Costs based on figures provided by vendors.

8.4 Supplies

Estimated cost for miscellaneous office supplies.

8.5 Utility Costs

Based on estimates from automated libraries and cooperative library agencies.

8.6 Duplication and Mailing

Costs estimated for general correspondence between automated system central office and members of cooperative.

8.7 Travel

Estimated automated system staff travel included in figure for training support.

9. PROCUREMENT PROCESS RELATED COSTS

9.1 Automation Consultant Contract Fees

It is assumed that the Automation Consultant will perform this work, no additional fees involved.

9.2 Legal Fees

Based on estimates from automated libraries.

9.3 RFP/Contract Document Preparation

Assumed to be handled by Automation Consultant.

10. SYSTEM PREPARATION AND INSTALLATION COSTS

10.1 Architectural Fees

Estimated as percentage of site preparation costs, as provided by automated libraries.

10.2 Site Preparation Costs

Vendor estimates furniture costs as listed in vendor catalog.

10.3 Shipping Charges and Insurance

Based on vendor estimate; annual insurance estimated as percentage of hardware and software costs.

10.4 Installation Charges

Based on vendor estimate.

10.5 Performance Bond Costs

Estimated by vendor.

10.6 Off-Site Storage Costs

Estimates from services.

10.7 Other

Vendor travel based on vendor estimate.

11. SUPPLIES AND CONSUMABLES

11.1 Stock Forms

Based on catalog list price.

11.2 Patron Cards

Based on catalog list price.

11.3 Computer Paper

Based on catalog list price.

11.4 Magnetic Tapes

Based on catalog list price.

11.5 Miscellaneous Supplies

Estimated.

11.6 Other Costs

Include estimated cost of mailing overdue notices, cataloging list price for OPAC tables (each carrying 2 OPAC terminals) for local libraries.

TABLE A4

BASIC STATISTICS FOR CONFIGURING REGIONAL AUTOMATION SYSTEMS FOR VIRGINIA LIBRARIES, BY REGION, 1985

Region	Number of Libraries	Total Number of Unique Titles	Total Annual Circulation	Database Size (Mbytes)	Number of Circulation Terminals Required	Number of OPAC Terminals Required
Northern	87	7,033,950	44,550,177	21,102	211	1,055
Northwest	77	2,687,408	6,669,740	8,062	185	925
Piedmont	101	5,004,409	10,998,597	15,013	244	1,220
Southern	67	3,312,560	5,724,145	9,937	159	795
Southwest	76	4,389,502	7,591,260	13,168	184	920
Tidewater	92	4,437,197	15,386,264	13,312	219	1,095
ALL	500	26,865,026	90,920,183	80,594	1,202	6,010

SOURCE: King Research, Inc.

TABLE A5

SUMMARY OF START-UP AND ANNUAL MAINTENANCE/OPERATIONAL COSTS TO MAINTAIN THE VIRGINIA DATABASE ON AN INTEGRATED, AUTOMATED LIBRARY SYSTEM AND TO SUPPORT ILL AND CIRCULATION

Region	One Time Costs ($)	Annual Recurring Costs ($)
Northern	2,518,865	905,633
Northwest	1,817,485	779,635
Piedmont	2,276,057	939,043
Southern	1,833,105	737,877
Southwest	2,046,107	812,188
Tidewater	2,175,055	888,172
ALL	12,666,674	5,062,548

SOURCE: King Research, Inc.

TABLE A6

SUMMARY OF COSTS TO UPGRADE REGIONAL AUTOMATION SYSTEMS TO SUPPORT ONLINE PUBLIC ACCESS CATALOGS

Region	One Time Costs ($)	Annual Recurring Costs ($)
Northern	3,410,752	398,663
Northwest	2,537,746	326,388
Piedmont	3,764,992	452,808
Southern	2,265,031	286,693
Southwest	2,080,154	323,810
Tidewater	3,499,868	415,690
ALL	18,558,543	2,204,052

SOURCE: King Research, Inc.

TABLE A7

REGION 1 (SOUTHWEST) AUTOMATION COSTS

(CIRC & ILL ONLY)

	One Time Costs ($)	Annual Recurring Costs ($)
1. Personnel	-	90,390
2. Computer Equipment	1,700,420	169,496
3. Communications Equipment	93,000	8,640
4. Other Equipment	10,975	1,332
5. Software	115,000	13,800
6. Telecommunications	6,308	337,060
7. Training	5,000	9,950
8. Staffing Support	1,420	93,940
9. Procurement	10,490	-
10. Preparation and Installation	103,454	1,380
11. Supplies and Consumables	-	86,200
TOTAL	2,046,107	812,188

SOURCE: King Research, Inc.

TABLE A8

REGION 2 (SOUTHERN) AUTOMATION COSTS

(CIRC & ILL ONLY)

	One Time Costs ($)	Annual Recurring Costs ($)
1. Personnel	-	90,390
2. Computer Equipment	1,507,165	137,140
3. Communications Equipment	74,000	6,600
4. Other Equipment	10,975	1,332
5. Software	115,000	13,800
6. Telecommunications	5,561	297,145
7. Training	5,000	9,950
8. Staffing Support	1,420	93,940
9. Procurement	10,490	-
10. Preparation and Installation	103,494	1,380
11. Supplies and Consumables	-	86,200
TOTAL	1,833,105	737,877

SOURCE: King Research, Inc.

TABLE A9

REGION 3 (TIDEWATER) AUTOMATION COSTS

(CIRC & ILL ONLY)

	One Time Costs ($)	Annual Recurring Costs ($)
1. Personnel	-	90,390
2. Computer Equipment	1,809,040	172,480
3. Communications Equipment	112,000	10,680
4. Other Equipment	10,975	1,332
5. Software	115,000	13,800
6. Telecommunications	7,636	408,020
7. Training	5,000	9,950
8. Staffing Support	1,420	93,940
9. Procurement	10,490	-
10. Preparation and Installation	103,494	1,380
11. Supplies and Consumables	-	86,200
TOTAL	2,175,055	888,172

SOURCE: King Research, Inc.

TABLE A10

REGION 4 (PIEDMONT) AUTOMATION COSTS

(CIRC & ILL ONLY)

	One Time Costs ($)	Annual Recurring Costs ($)
1. Personnel	-	90,390
2. Computer Equipment	1,890,295	181,396
3. Communications Equipment	131,000	12,720
4. Other Equipment	10,975	1,332
5. Software	115,000	13,800
6. Telecommunications	8,383	447,935
7. Training	5,000	9,950
8. Staffing Support	1,420	93,940
9. Procurement	10,490	-
10. Preparation and Installation	103,494	1,380
11. Supplies and Consumables	-	86,200
TOTAL	2,276,057	939,043

SOURCE: King Research, Inc.

TABLE A11

REGION 5 (NORTHERN) AUTOMATION COSTS

(CIRC & ILL ONLY)

	One Time Costs ($)	Annual Recurring Costs ($)
1. Personnel	-	90,390
2. Computer Equipment	2,153,265	212,116
3. Communications Equipment	112,000	10,680
4. Other Equipment	10,975	1,332
5. Software	115,000	13,800
6. Telecommunications	7,221	385,845
7. Training	5,000	9,950
8. Staffing Support	1,420	93,940
9. Procurement	10,490	-
10. Preparation and Installation	103,494	1,380
11. Supplies and Consumables	-	86,200
TOTAL	2,518,865	905,633

SOURCE: King Research, Inc.

TABLE A12

REGION 6 (NORTHWEST) AUTOMATION COSTS

(CIRC & ILL ONLY)

	One Time Costs ($)	Annual Recurring Costs ($)
1. Personnel	-	90,390
2. Computer Equipment	1,417,715	132,508
3. Communications Equipment	93,000	8,640
4. Other Equipment	10,975	1,332
5. Software	115,000	13,800
6. Telecommunications	6,391	341,495
7. Training	5,000	9,950
8. Staffing Support	1,420	93,940
9. Procurement	10,490	-
10. Preparation and Installation	103,494	1,380
11. Supplies and Consumables	-	86,200
TOTAL	1,817,485	779,635

SOURCE: King Research, Inc.

TABLE A14.1

DETAILED COMPUTER EQUIPMENT, COMMUNICATIONS EQUIPMENT AND TELECOMMUNICATIONS COSTS FOR SHARED REGIONAL SYSTEMS SUPPORTING ILL AND CIRCULATION

REGION 1 (SOUTHWEST)

	One Time Costs ($)	Annual Recurring Costs ($)
COMPUTER EQUIPMENT		
1 CPU	500,000	20,400
1 console	2,800	400
1 tape drive	54,000	4,320
1 line printer	14,400	1,800
1 expansion cabinet	7,000	-
10 disk units	560,000	67,200
1 add on memory unit	9,000	720
76 micros	228,000	27,360
108 terminals	129,600	7,776
76 wands - micros	52,820	5,472
108 wands -terminals	86,400	10,368
76 local printers	38,000	13,680
184 Cables	18,400	-
TOTAL	1,700,420	169,496
COMMUNICATIONS EQUIPMENT		
12 Multiplexors	72,000	5,040
6 Port expansions	21,000	3,600
TOTAL	93,000	8,640
TELECOMMUNICATIONS	6,308	337,060

SOURCE: King Research, Inc.

TABLE A13

DETAILED PERSONNEL COSTS FOR SHARED REGIONAL SYSTEMS SUPPORTING ILL AND CIRCULATION

	One Time Costs ($)	Annual Recurring Costs ($)
1. Direct Salaries		
1 Manager	-	31,000
2 Operators	-	38,000
2. Employee Benefits		
1 Manager	-	9,610
2 Operators	-	11,780
TOTAL		90,390

SOURCE: King Research, Inc.

TABLE A14.2

DETAILED COMPUTER EQUIPMENT, COMMUNICATIONS EQUIPMENT AND TELECOMMUNICATIONS COSTS FOR SHARED REGIONAL SYSTEMS SUPPORTING ILL AND CIRCULATION

REGION 2 (SOUTHERN)

	One Time Costs ($)	Annual Recurring Costs ($)
COMPUTER EQUIPMENT		
1 CPU	500,000	20,400
1 console	2,800	400
1 tape drive	54,000	4,320
1 line printer	14,400	1,800
1 expansion cabinet	7,000	-
8 disk units	448,000	53,760
add on memory units	-	-
67 micros	201,00	24,120
92 terminals	110,400	6,624
67 wands - micros	46,565	4,824
92 wands -terminals	73,600	8,832
67 local printers	33,500	12,060
159 Cables	15,900	-
TOTAL	1,507,165	137,140
COMMUNICATIONS EQUIPMENT		
10 Multiplexors	60,000	4,200
4 Port expansions	14,000	2,400
TOTAL	74,000	6,600
TELECOMMUNICATIONS	5,561	297,145

SOURCE: King Research, Inc.

TABLE A14.3

DETAILED COMPUTER EQUIPMENT, COMMUNICATIONS EQUIPMENT AND TELECOMMUNICATIONS COSTS FOR SHARED REGIONAL SYSTEMS SUPPORTING ILL AND CIRCULATION

REGION 3 (TIDEWATER)

	One Time Costs ($)	Annual Recurring Costs ($)
COMPUTER EQUIPMENT		
1 CPU	500,000	20,400
1 console	2,800	400
1 tape drive	54,000	4,320
1 line printer	14,400	1,800
1 expansion cabinet	7,000	-
10 disk units	560,000	67,200
1 add on memory unit	9,000	720
92 micros	276,000	33,120
127 terminals	152,400	9,144
92 wands - micros	63,940	6,624
127 wands -terminals	101,600	12,192
92 local printers	46,000	16,560
219 Cables	21,900	-
TOTAL	1,809,040	172,480
COMMUNICATIONS EQUIPMENT		
14 Multiplexors	84,000	5,880
8 Port expansions	28,000	4,800
TOTAL	112,000	10,680
TELECOMMUNICATIONS	7,636	408,020

SOURCE: King Research, Inc.

TABLE A14.4

DETAILED COMPUTER EQUIPMENT, COMMUNICATIONS EQUIPMENT AND TELECOMMUNICATIONS COSTS FOR SHARED REGIONAL SYSTEMS SUPPORTING ILL AND CIRCULATION

REGION 4 (PIEDMONT)

	One Time Costs ($)	Annual Recurring Costs ($)
COMPUTER EQUIPMENT		
1 CPU	500,000	20,400
1 console	2,800	400
1 tape drive	54,000	4,320
1 line printer	14,400	1,800
1 expansion cabinet	7,000	-
10 disk units	560,000	67,200
2 add on memory units	18,000	1,440
101 micros	303,000	36,360
143 terminals	171,600	10,296
101 wands - micros	70,195	7,272
143 wands -terminals	114,400	13,728
101 local printers	50,500	18,180
244 Cables	24,400	-
TOTAL	1,890,295	181,396
COMMUNICATIONS EQUIPMENT		
16 Multiplexors	96,000	6,720
10 Port expansions	35,000	6,000
TOTAL	131,000	12,720
TELECOMMUNICATIONS	8,383	447,935

SOURCE: King Research, Inc.

TABLE A14.5

DETAILED COMPUTER EQUIPMENT, COMMUNICATIONS EQUIPMENT AND TELECOMMUNICATIONS COSTS FOR SHARED REGIONAL SYSTEMS SUPPORTING ILL AND CIRCULATION

REGION 5 (NORTHERN)

	One Time Costs ($)	Annual Recurring Costs ($)
COMPUTER EQUIPMENT		
1 CPU	500,000	20,400
1 console	2,800	400
1 tape drive	54,000	4,320
1 line printer	14,400	1,800
1 expansion cabinet	7,000	-
16 disk units	896,000	107,520
5 add on memory units	45,000	3,600
87 micros	261,000	31,320
124 terminals	148,800	8,928
87 wands - micros	60,465	6,264
124 wands -terminals	99,200	11,904
87 local printers	43,500	15,660
211 Cables	21,100	-
TOTAL	2,153,265	212,116
COMMUNICATIONS EQUIPMENT		
14 Multiplexors	84,000	5,880
8 Port expansions	28,000	4,800
TOTAL	112,000	10,680
TELECOMMUNICATIONS	7,221	385,845

SOURCE: King Research, Inc.

TABLE A14.6

DETAILED COMPUTER EQUIPMENT, COMMUNICATIONS EQUIPMENT AND TELECOMMUNICATIONS COSTS FOR SHARED REGIONAL SYSTEMS SUPPORTING ILL AND CIRCULATION

REGION 6 (NORTHWEST)

	One Time Costs ($)	Annual Recurring Costs ($)
COMPUTER EQUIPMENT		
1 CPU	500,000	20,400
1 console	2,800	400
1 tape drive	54,000	4,320
1 line printer	14,400	1,800
1 expansion cabinet	7,000	-
6 disk units	336,000	40,320
add on memory units	-	-
77 micros	231,000	27,720
108 terminals	129,600	7,776
7 wands - micros	53,515	5,544
108 wands -terminals	86,400	10,368
77 local printers	38,500	13,860
185 Cables	18,500	-
TOTAL	1,471,715	132,508
COMMUNICATIONS EQUIPMENT		
12 Multiplexors	72,000	5,040
6 Port expansions	21,000	3,600
TOTAL	93,000	8,640
TELECOMMUNICATIONS	6,391	341,495

SOURCE: King Research, Inc.

TABLE A15

OTHER DETAILED COSTS ASSOCIATED WITH SHARED REGIONAL SYSTEMS SUPPORTING ILL AND CIRCULATION

	One Time Costs ($)	Annual Recurring Costs ($)
Other Equipment		
1 Forms burster	1,375	180
1 Backup power unit	9,600	1,152
Subtotal	10,975	1,332
Software		
1 basic package	115,000	13,800
Training		
Training by vendor	5,000	9,950
Automated System Staffing Support		
Leased space 500sq.ft.	-	60,000
Furniture	1,120	-
Telephones	300	1,440
Office supplies	-	2,500
Utilities		20,000
Duplication and mailing		10,000
Subtotal	1,420	93,940
Procurement		
RFP preparation and contract review	10,490	-

660

TABLE A16

REGION 1 (SOUTHWEST) AUTOMATION COSTS

(OPAC UPGRADE)

	One Time Costs ($)	Annual Recurring Costs ($)
1 CPU	500,000	20,400
1 Console	2,800	408
1 Printer	14,400	1,800
1 Disk Unit	56,000	6,720
920 Terminals	1,104,000	66,240
920 Cables	92,000	-
1 Backup Power Unit	9,600	1,152
Software	25,000	3,000
58 Multiplexors	348,000	24,360
52 Port Expansions	182,000	31,200
Telecommunications	3,154	168,530
Supplies & Consumables (OPAC tables)	193,200	-
TOTAL	2,080,154	323,810

SOURCE: King Research, Inc.

TABLE A15 (continued)

OTHER DETAILED COSTS ASSOCIATED WITH SHARED REGIONAL SYSTEMS SUPPORTING ILL AND CIRCULATION

	One Time Costs ($)	Annual Recurring Costs ($)
System Preparation and Installation		
Site preparation	50,000	-
Security system	1,000	-
Computer room furniture	600	-
Shipping and insurance	21,934	-
Installation	7,000	-
Performance bond costs	11,960	-
Off-site storage costs	-	1,380
Other - vendor staff costs	6,000	-
Subtotal	103,494	1,380
Supplies and Consumables		
Stock forms (overdue notices, etc.)	-	4,000
Patron cards	-	15,000
Computer paper	-	4,800
Magnetic tapes	-	2,400
Miscellaneous	-	10,000
Mailing of overdue notices	-	50,000
Subtotal	-	86,200

SOURCE: King Research, Inc.

TABLE A17

REGION 2 (SOUTHERN) AUTOMATION COSTS

(OPAC UPGRADE)

	One Time Costs ($)	Annual Recurring Costs ($)
1 CPU	500,000	20,400
1 Console	2,800	408
1 Printer	14,400	1,800
1 Disk Unit	56,000	6,720
795 Terminals	954,000	57,240
795 Cables	79,500	-
1 Backup Power Unit	9,600	1,152
Software	25,000	3,000
50 Multiplexors	300,000	21,000
44 Port Expansions	154,000	26,400
Telecommunications	2,781	148,573
Supplies & Consumables (OPAC tables)	166,950	-
TOTAL	2,265,031	286,693

SOURCE: King Research, Inc.

TABLE A18

REGION 3 (TIDEWATER) AUTOMATION COSTS

(OPAC UPGRADE)

	One Time Costs ($)	Annual Recurring Costs ($)
2 CPUs	1,000,000	40,800
2 Consoles	5,600	816
2 Printers	28,800	3,600
2 Disk Units	112,000	13,440
1,095 Terminals	1,314,000	78,840
1,095 Cables	109,500	-
2 Backup Power Units	19,200	2,304
Software	42,500	5,100
69 Multiplexors	414,000	28,980
63 Port Expansions	220,500	37,800
Telecommunications	3,818	204,010
Supplies & Consumables (OPAC tables)	229,950	-
TOTAL	3,499,868	415,690

SOURCE: King Research, Inc.

TABLE A19

REGION 4 (PIEDMONT) AUTOMATION COSTS

(OPAC UPGRADE)

	One Time Costs ($)	Annual Recurring Costs ($)
2 CPUs	1,000,000	40,800
2 Consoles	5,600	816
2 Printers	28,800	3,600
2 Disks	112,000	13,440
1,220 Terminals	1,464,000	87,840
1,220 Cables	122,000	-
2 Backup Power Units	19,200	2,304
Software	42,500	5,100
77 Multiplexors	462,000	32,340
71 Port Expansions	248,500	42,600
Telecommunications	4,192	223,968
Supplies & Consumables (OPAC tables)	256,200	-
TOTAL	3,764,992	452,808

SOURCE: King Research, Inc.

TABLE A20

REGION 5 (NORTHERN) AUTOMATION COSTS

(OPAC UPGRADE)

	One Time Costs ($)	Annual Recurring Costs ($)
2 CPUs	1,000,000	40,800
2 Consoles	5,600	816
2 Printers	28,800	3,600
2 Disks	112,000	13,440
1,055 Terminals	1,266,000	75,960
1,055 Cables	105,500	-
2 Backup Power Units	19,200	2,304
Software	42,500	5,100
66 Multiplexors	396,000	27,720
60 Port Expansions	210,000	36,000
Telecommunications	3,602	192,923
Supplies & Consumables (OPAC tables)	221,550	-
TOTAL	3,410,752	398,663

SOURCE: King Research, Inc.

TABLE A21

REGION 6 (NORTHWEST) AUTOMATION COSTS

(OPAC UPGRADE)

	One Time Costs ($)	Annual Recurring Costs ($)
1 CPUs	500,000	20,400
1 Console	2,800	408
1 Printer	14,400	1,800
1 Disks	56,000	6,720
925 Terminals	1,110,000	66,600
925 Cables	92,500	-
1 Backup Power Unit	9,600	1,152
Software	25,000	3,000
58 Multiplexors	348,000	24,360
52 Port Expansions	182,000	31,200
Telecommunications	3,196	170,748
Supplies & Consumables (OPAC tables)	194,250	-
TOTAL	2,537,746	326.388

SOURCE: King Research, Inc.

A3. Costs of Producing and Reproducing CAVALIR on CD-ROM

TABLE A22

COSTS OF CD-ROM PRODUCTION

• Cost to master each disk (containing up to 500,000 full MARC records plus indexes)	$ 7,500
• Cost to reproduce each disk set	$ 5
• Cost to produce search software	$10,000

TABLE A23

PROJECTED COSTS TO PRODUCE CAVALIR ON CD-ROM 3 TIMES PER YEAR AND DISTRIBUTE TO 500 LIBRARIES

Year	Number of Disks in Master	Total Costs ($)
1986	5	45,0000
1987	6	52,500
1988	7	60,000
1989	9	75,000
1990	11	90,000
1991	13	105,000
1992	15	102,000
1993	17	135,000
1994	19	150,000
1995	21	165,000
1996	22	172,500
1997	23	180,000
1998	23	180,000
1999	23	180,000
2000	23	180,000
2001	24	187,500

NOTE: It is anticipated that laser disk technology will develop considerably over the next 15 years. The above estimates are based on available technologies; in the future we anticipate that the capacity of disks will double many times over thereby reducing mastering costs.

TABLE A24

SOURCES OF CD-ROM TECHNOLOGY

Producers of Libraries' Databases on CD-ROM

- Batelle
- Brodart
- Gaylord
- General Research Corporation (Santa Barbara)
- Horizon Information Services
- The Library Corporation
- Online Computer Systems, Inc.

General Producers

Reference Technology, Inc.
1832 N. 55th Street
Boulder, Colorado 80301
Contact: Michael Befeler -- (303) 449-4157

Sony of America
Sony Drive
Park Ridger, New Jersey 07656
Contact: Mark Simmons or John Hartigan -- (201) 930-6106

Panasonic [Matsushita]
333 Meadowland parkway
Secaucus, New Jersey 07094
Contact; David Shenb -- (201) 392-4602

North American Philips [NV Philips]
100 E. 42nd Street
New York, New York 10017
Contact: Bert Gall -- (212) 850-5011

Denon [Nippon-Columbia]
27 Law Drive
Fairfield, New Jersey 07006
Contact: Robert Heiblim -- (201) 575-7810

3M - Optical Recording Project
223-5N 3M Center
St. Paul, Minnesota 55144
Contact: Thomas Kelly -- (612) 736-4520

Hitachi Sales Corp. of Am.
401 W. Artesia Boulevard
compton, California 90220
Contact: Jiro Oi -- (213) 537-8383

Digital Equipment Corp.
333 South Street
Shrewsbury, Massachusetts 01545
Contact: Ed Schmid -- (617) 841-3776

A4. Costs of Using ALANET

TABLE A25

COSTS TO USE ALANET

BASIC SERVICES

Project Set-Up

Sign-up fee at $45.00	$ 45
500 extra IDs at $2.00 each one-time-charge	1,000
5 billing fees (up to 35 IDs per billing fee) at $99/year	495
Subtotal	$ 1,540

Basic Training Materials

500 ALANET Miniguides at $4.00	$ 2,000
less 30% quantity discount	- 600
Total	$ 1,400
500 Reference Cards at $.50	250
Subtotal	$ 1,650

USE CHARGES

Connect Time: at average 2 hours per month per ID at $17 per hour prime-time = 1,000/hrs x $17 x 12 months	$204,000
Text Storage: at average $3.00 per month per ID (500 x $3 $1,500/month) x 12 months	18,000
Subtotal	$222,000

Total costs for basic services* for Year One	$225,190
Annual recurring costs for basic services* in subsequent years	$222,495

---

* Basic services are listed in Section 2.6.1.

Notes on ALANET Costs

(1) Prime time is 8:00 a.m. to 6:00 p.m. weekdays Eastern Time; connect time is $4.00 per hour less at other times.

(2) The bulletin board facility incurs a surcharge of $4.00 per hour (total $21/hour prime), but this should not affect these projections significantly.

(3) A special directory and instructional materials would be prepared as needed to support the Virginia libraries' project at no additional charge. In addition to these basic training materials, there are several instructional texts available online in a separate instructional menu. With the above items plus the online texts, a user in the field can ordinarily use the system quite well without the full ITT Dialcom Manual; one copy of that manual is included with the sign-up fee, and additional copies are $32.00 plus $1.50 shipping.

(4) The only use charges incurred are for actual connect time and text storage. There are no character-transmission charges, nor are there any monthly minimum fees (except for actual text storage or connect time). Telecommunications are included in connect time charges; the only fees paid separately by the user are for the phone call into the telecommunications network and for any equipment needed for dialing into the system.

APPENDIX B

OPTIONS FOR NETWORKING COMPONENTS

TABLE OF CONTENTS

Section		Page
B.1	Options for the Development of Network Nodes	B-1
B.1.1	Development of Local/Regional Databases	B-1
B.1.1.1	Factors to Consider in Retrospective Conversion	B-2
B.1.1.2	Conversion Alternatives	B-4
B.1.1.3	Bar Coding	B-6
B.1.2	Development of Local/Regional Automated Systems	B-7
B.1.3	Development of Regional Interlibrary Loan Procedures and Protocols	B-9
B.1.4	Development of Regional Delivery Systems	B-9

OPTIONS FOR NETWORKING COMPONENTS

B.1 Options for the Development of Network Nodes

In addition to the network development acivities which are best suited to coordination and implementation at the state level, there are a number of developments which will occur at the regional or local level. Earlier we described the recommended network evolving as a series of interconnected nodes with a variety of types of nodes; if will be an interconnecting network which will increase in sophistication and intelligence over time.

Although the nodes can be organized internally in different ways they should adhere to standards defined by the network at the state level and should be responsible for the following activities:

- development of local/regional databases for inclusion in the Virginia database;
- development of local/regional automation to initially support online bibliographic databases and circulation control, and to eventually support online public access catalogs;
- development of regional interlibrary loan protocols and procedures;
- development of regional delivery systems;

We anticipate both local and regional developments proceeding in tandem.

B.1.1 Development of Local/Regional Databases

This activity relates directly to the continued development of the Virginia database. Network members should agree to use the MARC format for their machine-readable bibliographic databases which will then be eligible for inclusion as nodes in the network. Those libraries who do not have full MARC records should use one or more of the standard unique identifiers — LC number, ISBN, etc. — so that the records could be upgraded at a later date. Libraries with non-MARC records or without any machine-readable records will still be able to participate in network activities, but not as active nodes in the network.

At the start of the network development process, some network nodes will already exist in the form of those libraries that already have created machine-readable databases in MARC format. Some of these nodes will expand to incorporate other libraries' holdings in the nodal database. Other nodes will be defined by groups of libraries without a database, but with a commitment to resource sharing among themselves; these nodes should actively develop plans to create databases.

In each of the regions in Virginia, a regional networking committee should be established to investigate the interest in and feasibility of developing regional databases. Once the interest has been determined, alternative methods for building the database can be employed.

B.1.1.1 Factors to Consider in Retrospective Conversion

All of the recent advances in the field of library automation are largely based on the development of standardized machine-readable bibliographic cataloging records. Since the mid-sixties, the Library of Congress has created a file of its cataloging output which has made possible not only the production and dissemination of catalog cards but, more importantly, of the machine-readable records themselves. The LC machine-readable cataloging file, known as MARC, has been the resource database supporting most library automation products and services. The variable length record format devised for LC MARC has become an international standard, used by all major library automation vendors, and its use ensures that the library's data may be used for a variety of library automation applications without extensive re-formatting.

At the library level, a "conversion" is usually thought of as the transfer of cataloging data from a manual form (a card catalog) to a machine-readable form. This may be accomplished in a number of different ways:

> A card catalog or shelf list may be microfilmed and the data keyed by a vendor without using a resource data base. This method has the advantage of retaining the library's cataloging in its existing state, of not requiring library staff, and not disrupting the manual system. The disadvantages are that it is expensive, labor-intensive, and error-prone.
>
> A library may prepare the conversion in-house by keying "search extracts" to select records from a resource data base maintained by a vendor. A search extract is usually a brief record containing author, short title, imprint, local call number and holdings, and LC card number or ISBN when available. The conversion vendor stores these transactions and, when all have been keyed, matches them against a resource data base to select full cataloging information. Using input media such as OCR or microcomputer diskettes, it is possible to enter 60 search extracts per hour.
>
> This method is inexpensive and quick although its effectiveness is lessened with an older collection containing many titles pre-dating the MARC file. Usually the conversion vendor also produces catalog products such as COM catalogs from the library's converted records.
>
> A library may convert its holdings using an on-line resource data base maintained by a bibliographic "utility" such as OCLC or UTLAS. This method may involve library staff or may be contracted to the utility. This option is limited to members of those organizations. Titles are retrieved from the utility's resource data base, modified on-line and then written to a magnetic tape. This method is accurate but labor-intensive, time-consuming, and expensive. Once completed, the library must find another vendor to produce the final catalog products.

Before conversion can begin, a library/system needs to make many policy decisions regarding procedures to be used. The following factors will influence such decisions:

> (1) Purpose of the conversion. Is the library/system creating a database for resource sharing or circulation, or both? Does the library want its records to be accessible to other libraries through a bibliographic utility database? How soon would the database be used for circulation?

(2) Composition of the collection. Assuming that conversion will be accomplished by matching against existing machine-readable records, what type of resource database will the library/system require (e.g., a database containing many other public library records)?

(3) Condition of the shelf list. How up-to-date is it? How much work would be required to prepare it for vendor keying?

(4) Search keys required. What search keys are required for matching (e.g., LC card number, ISBN, ISSN, OCLC card number, author/title only)? Conversion on vendor databases may require a unique number, which reduces the numer of keystrokes and ensures a unique hit but may require look-up of each number before keying. Author/title keying requires no look-up but results in more non-unique matches to be resolved.

(5) Editing required. What are the ramifications of not editing/altering records found in a resource database to conform exactly to existing library cataloging?

(6) Notification and entry of no hits. Does the conversion method allow for entry (cataloging) of no hits (items not found in the resource database)? If conversion is done offline, does the vendor supply a listing of multiple hits and no hits?

(7) Other services needed. Will the database require authority control, AACR2 conversion, de-duping? Does the vendor provide these services?

(8) How can handling of each item be minimized. If a database is to be used for circulation, what are the trade-offs between bar coding at the time of conversion (an inventory conversion), and applying bar-coded labels after the entire database has been keyed from an existing shelf list?

(9) Resources available. Are library personnel available to do the conversion? Can the library/system hire additional staff for keying? How much money is available? Within what time period must the conversion be completed? Is there existing equipment (e.g., microcomputers, OCLC terminals) available for library keying?

B.1.1.2 Conversion Alternatives

Within the overall range of conversion options available to libraries, the costs, advantages and disadvantages of each option can be most easily evaluated in terms of the method of entry and source of database: vendor keying/online vendor database, library keying/online vendor database, library keying/offline vendor database. The comparison of the cost of each method is based upon an average per title cost quoted by vendors for that method, and the total number of titles to be converted. Note that the conversion costs listed below do not include staff costs at the local level for preparation of data for conversion and for local editing of records following conversion.

Vendor Keying/Online Vendor Database

Method: library supplies shelf list to vendor for input, records are searched for and modified online, no hits can be input online, library/system database written to magnetic tape

Average cost/ record: $1.12

Advantages:
- do not need library/system staff
- usually accurate
- can input no hits and resolve multiple hits right away
- can be fast
- if utility database used, records are accessible online to other utility members

Disadvantages:
- relatively expensive
- considerable work may be required to prepare shelf list for vendor prior to beginning conversion

Library Keying/Online Vendor Database

Method: similar to vendor keying, but performed by library staff.

Average cost/ record: $0.42 plus membership, set-up and telecommunications charges.

Advantages:
- can input no hits and resolve multiple hits right away
- can be fast
- if utility database used, records are accessible online to other utility members.
- no prior look-up required for search keys

Disadvantages:
- if utility database, usually must also be a member
- requires staff time
- relatively expensive

Library Keying/Offline Vendor Database

Method:	(1)look up search key if not available, key into microcomputer, record onto floppy disk, send to vendor for matching, receive list of no-hits, multiple hits, instruct vendor on input of multiple hits, enter no hits (if software available). (2)use vendor provided laser disk containing partial or complete MARC record, either use partial record to identify search keys and input as in (1) above, or directly extract MARC record.
Average cost/ record (method 1):	$0.23
Advantages: (method 1)	relatively inexpensive
Disadvantages: (method 1)	requires staff time for look-up and input have to wait to resolve multiple hits, no hits may not be able to convert no hits hit rates may vary may need a microcomputer records may not be available to others through a utility

B.1.1.3 Bar Coding

Another set of costs associated with conversion for circulation purposes is that of bar coding. As noted earlier, there are basically two options for bar coding: (1) to bar code while keying with the item in hand, or (2) to create a machine-readable tape of all records from a shelf list, embed the bar code numbers in the record automatically by tape processing, send the tape to a bar code vendor, obtain the bar codes, apply labels to the items, and delete all records for which the label is not used (e.g., items no longer in the collection).

The advantage to bar coding at the time of conversion is that it enables the library to produce a "clean database". However, if the library does not intend to use the tape for circulation purposes right away, this tape may also become outdated. This method is also extremely time consuming.

The alternative method results in a potentially more "dirty" database and requires considerable clean-up after creation, but it is faster and can be implemented at the time the database will be used for circulation.

B.1.2 Development of Local/Regional Automated Systems

As mentioned earlier in this report, we see the predominant nodal type as being regional multitype consortia of libraries who are committed to sharing resources. Such consortia should also seriously consider the benefits of sharing automated systems. While the majority of automated library sysems that have been installed to date have supported simple functions only (usually circulation or acquisitions), we recommend that automation planning by libraries provide for the support of multiple functions in an integrated fashion on a single system. Single function systems no longer justify the substantial investment required for hardware, software and the conversion of bibliographic records.

Libraries should consider sharing automated systems only if they are prepared for increased flow of materials and patrons among the cooperating libraries. The greatest benefit of shared systems is not in cost reductions for individual library functions, but in the creation of a common online holdings file which facilitates resource sharing. At the most immediate level, the existence of such a file can be expected to streamline and increase interlibrary lending. The file would speed up the identification of which of the cooperating libraries holds a needed item, and would provide information about whether it is available for loan at that time. The electronic transmission of the loan request would speed the processing of the loan, and the ability to electronically record holds against an item would improve turnaround time for checking in loaned materials and matching a returned item to a waiting request. Automatic monitoring of loan and hold requests would provide library staff with immediate warnings when demand for an item exceeds a predetermined level, permitting the prompt placement of orders for extra copies, or alteration of the loan period for items subject to heavy demand.

Regardless of whether a library procures a stand-alone or a shared multi-function system, it can at best expect to recover the cost of automation through savings in processing overdues, acquisition funds accounting, and in the maintenance of card catalogs.

Libraries considering automation should be aware of the importance of limiting the number of different types of major systems to minimize interconnection problems. If all the automated circulation systems in operation or in the process of being installed in Virginia libraries were to be interconnected, a total of 190 different interfaces would be required. However, this number can be reduced to 28 interfaces if we consider only the eight MARC-based systems. These systems are:

- CLSI
- DataPhase
- DRA
- Dynix
- Geac
- LS/2000
- NOTIS
- VTLS.

At the present time, interfaces would have to be developed virtually "from scratch." But efforts are underway to develop a universal interface language which all the major vendors are expected to implement when it becomes available. Thus, if funds are to be made available for interface development, it would be to the advantage of libraries to select one of the existing systems in the state. If the decision is to wait until interfaces are available as add-on features of systems, then the choice of system becomes much greater.

Within each region, we recommend the designation of two or three publicly-funded libraries as nodal points. Each of these libraries will be designated as official points of contact with the network. Other libraries can also serve as nodal points, but the "official points" will have the responsibility for libraries in the area that cannot otherwise access the network or who want to participate in cooperative activities.

B.1.3 Development of Regional Interlibrary Loan Procedures and Protocols

Each region will need to develop draft procedures and protocols for interlibrary loan request placement and response. Standard maximum turnaround times should be recommended for supply of physical materials for processing of requests for photocopies (non-rush requests), and for telefacsimile transmission of short documents needed on a rush basis. The draft documentation that is developed should list the two groups of libraries within the region who are potential regional nodes and those who are potential full participants in the network. These libraries should have the opportunity to review the draft procedures and protocols and recommend modifications as appropriate.

Accepted regional procedures and protocols should be submitted for review by a state-level group to ensure that each region's interlibrary loan procedures and protocols are compatible with those adopted by the other regions within the state.

B.1.4 Development of Regional Delivery Systems

Each region also must study development of regional delivery systems from two perspectives: delivery of physical items and telefacsimile transmission of short documents.

Costs should be collected for regional and local delivery services and compared with costs for lease/purchase and operation of an interlibrary van service. The route(s) and frequency of delivery would need to be determined by each region based on estimated needs for service.

Libraries within each region should identify their interest and need for telefacsimile transmission of short documents. The group should obtain the telefacsimile equipment recommended at the state-level in order to ensure compatibility of telefacsimile transmission statewide and to benefit from state-negotiated volume discounts.